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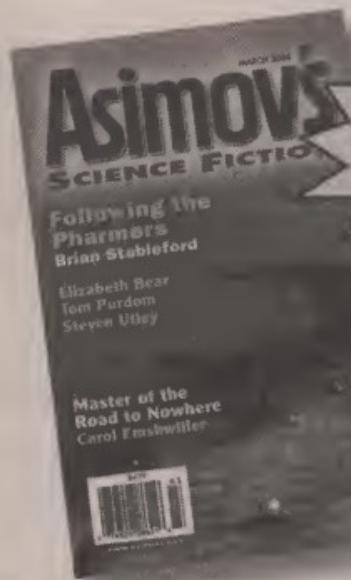
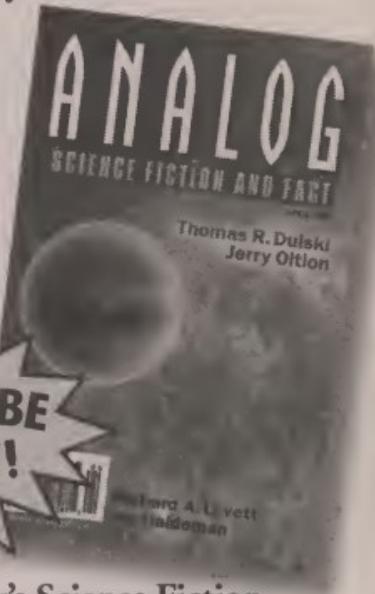
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SCIENCE FICTION

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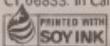
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CENTERING SCIENCE FICTION

Last month, I promised to follow up my editorial on one of the roads not taken in my life with an editorial about the Center for the Study of Science Fiction. The Center serves as an umbrella for a variety of science fiction programs available at the University of Kansas in Lawrence. Although officially founded in 1982 by James Gunn, the CSSF actually traces its beginnings back to 1970. That was when Jim's first course in science fiction was offered at KU. Those early courses are the ones I longed to enroll in as a graduating high school senior. While I'm sure they would have been wonderful, the diversity of programs at KU has exploded in the intervening years.

The Intensive English Institute on the Teaching of Science Fiction was launched in 1975 and became an annual event in 1977. In the early days, Jim brought in three visiting writers: Gordon R. Dickson, Theodore Sturgeon, and Frederik Pohl, and they became fixed parts of the program for a number of years. In 1985, Jim, with Fred as a visiting author, began offering an intensive writers workshop.

The Center, which had begun presenting the John W. Campbell Memorial Award for the best SF novel of the year at the first annual Campbell Conference and Awards Banquet in 1979, added the Theodore Sturgeon Memorial Award for the best short story to its roster in 1987. In 1996, the Kansas City Science Fiction and Fantasy Society and the CSSF created the Science Fiction Hall of Fame.

In 2004, The Hall of Fame moved to the EMP Museum in Seattle, Washington, but the Center continued to foment new ideas and programs. In 2005, the Center started AboutSF, "a resource to help educators and librarians better understand and teach science fiction." This education-



al outreach program offers reading guides, teaching kits, and sample projects. It provides a conduit for finding guest speakers and links to lectures and interviews, as well as a myriad of other helpful tools. Benjamin Cartwright, a Ph.D. candidate at KU, is the program's current coordinator. Information on this invaluable program can be found at *Aboutsf.com*.

The English and technical writing departments continue to offer semester-long courses in science fiction. The intensive science fiction literature course, which is invaluable to students of science fiction and academics who intend to teach courses about SF, is now a two-week course that runs on either side of the Campbell conference. The yearly focus alternates between the novel and the short story, but beginning in 2012, the Institute will also be available as a full-semester course, alternating with the prior summer's SF Institute topic. This means that while the 2012 Institute's summer focus will be on the novel,

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the fall course will be on the short story. In the summer of 2013, the intensive course will be about the short story and the fall course will concentrate on the novel. This course is also available online for teachers who cannot attend the class on campus.

July is a hot month for SF in Kansas. Although James Gunn retired from directing the short story workshop in 2010, he still drops in to "meet with workshopers and offer words of writing wisdom." Chris McKitterick, an author and one of Jim's former students, began co-teaching the workshop in 1996. He is now the director of the CSSF. Chris teaches many of the courses on SF at KU and he and guest author Bradley C. Denton lead the workshop. Another former student of Jim's is the Nebula- and Hugo-Award-winning author Kij Johnson. Kij co-taught the workshop from 1996 until 2002. Since 2002, she has offered her own science fiction and fantasy novel writers workshop during the same two-week period.

KU's bookstore, Jayhawk Ink, gets into the act with their annual Sci Fi July Book Signings and Readings. Visitors can have works signed by noted authors and editors and then stick around for three or four hours of invigorating readings. The event is free and open to the public. This summer, readers presented some of the works of Frederik Pohl. The affair's exquisite poster, which incorporated classic art from an old SF magazine cover, was designed by Laura Fisk.

I got a taste of what was going on in Lawrence during my visit to the Campbell Conference, but more information about these classes, workshops, and events can be found at sfcenter.ku.edu. Anyone familiar with the science fiction field knows that there are a number of terrific writers workshops. Still, it's remarkable to think that most of the exciting activity at the University of Kansas owes its inception to one man's vision and dedication. Science fiction is richer for James Gunn's guiding influence, and I was lucky that I had the chance to spend some time with him this summer and to see firsthand the world that he has set in motion. O

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SCIENCE FICTION

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Best Novel

Blackout/All Clear
Connie Willis

Best Novella

"The Lifecycle
of Software Objects"
Ted Chiang

Best Novelette

"The Emperor of Mars"
Allen M. Steele
Asimov's, June 2010

Best Short Story

"For Want of a Nail"
Mary Robinette Kowal
Asimov's, September 2010

Best Related Book

Chicks Dig Time Lords
edited by Lynne M. Thomas
and Tara O'Shea

Best Graphic Story

Girl Genius, Vol. 10
Kaja and Phil Foglio

Best Dramatic Presentation:

Long Form
Inception

**John W. Campbell Award for
Best New Writer**

Lev Grossman

Best Dramatic Presentation:

Short Form

*Doctor Who:
"The Pandorica Opens/
The Big Bang"*

Best Professional Editor:

Long Form

Lou Anders

Best Professional Editor:

Short Form

Sheila Williams

Best Professional Artist

Shaun Tan

Best Semi-Pro Zine

Clarkesworld
Edited by Neil Clarke, Sean
Wallace, & Cheryl Morgan

Best Fanzine

The Drink Tank
Edited by Christopher J
Garcia and James Bacon

Best Fan Writer

Claire Brialey

Best Fan Artist

Brad W. Foster

RARE EARTHS, GETTING RARER

About four years ago I did a column for this magazine about our vanishing supplies of certain scarce elements that are essential to the functioning of our technological society. This quote from it will give you the idea:

It isn't just wildlife that can go extinct. The element gallium is in very short supply and the world may well run out of it in just a few years. Indium is threatened too, says Armin Reller, a materials chemist at Germany's University of Augsburg. He estimates that our planet's stock of indium will last no more than another decade. All the hafnium will be gone by 2017 also, and another twenty years will see the extinction of zinc. Even copper is an endangered item, since worldwide demand for it is likely to exceed available supplies by the end of the present century.

Copper and zinc are well-known elements, but gallium, hafnium, and indium are unfamiliar names, esoteric members of the periodic table. They are used in making the liquid-crystal displays of flat-screen television sets, the control rods for nuclear reactors, and computer chips, and we will be hard pressed to do without them. But there is another group of elements that have even stranger names—the so-called "rare earths," the fourteen metals that occupy the 58th through 71st rungs in the list of elements, plus three more, elements 21, 39, and 57, that are usually included with them. Praseodymium? Ytterbium? Lutetium? Dysprosium? The names don't run trippingly from the tongue. All of us can name dozens of the 92 natural elements—gold, silver, lead, hydrogen, carbon, nitrogen, and on and

on. Uranium! Oxygen! Iron! But—Thulium? Erbium? Promethium? Not exactly household words. And they, too, are essential to our technological society.

They aren't all that rare. Nineteenth-century chemists dubbed them "rare earths" because it was difficult then to extract them in pure form. In fact, the rare earth cerium is the 25th most abundant element in the Earth's crust, less rare on our planet than tin, thulium is as plentiful as gold or silver, and most of the others are reasonably abundant. Only radioactive promethium is truly rare, because it has a half-life of 17.7 years and keeps using itself up. The trouble is that these elements are found only in a few select places on Earth, and extracting them from those places is a messy and environmentally dangerous business; the ores are very closely entangled with the radioactive element thorium, which makes them hard to refine, and because of that geographical fluke and the thorium problem we are facing a critical shortage of them.

China, for example, produces 99 percent of the world's supply of the rare earth dysprosium, which is used in those wiggly looking fluorescent light bulbs that our legislators want to make mandatory, and in the sleek little smartphones that almost everyone carries these days. Rare earths are also used in laser-guided weapons and hybrid-car batteries, portable X-ray machines, welding goggles, self-cleaning ovens, and many another twenty-first-century specialty. China also controls 92 percent of the cerium and lanthanum supply, elements needed in the manufacture of a great many useful devices. The latter two rare earths, and some others, come mainly from an unusual geological formation running across China's southern provinces of

Jiangxi and Guandong, the only known deposit of them in the world that is not contaminated with radioactive thorium. These are the "light" rare earths, those with lower atomic numbers. The main supply of dysprosium and others in the group of "heavy" rare earths is found in a desert region near Baotou in northern China.

China maintains tight export controls over these prized substances, thereby keeping their prices high, and sometimes cuts off shipment of them entirely for political reasons, as it did in September 2010, when it banned all rare-earth exports to Japan for two months during a territorial squabble. (And kept close watch over other countries' reshipment of rare earths to Japan to make sure that the Japanese electronics industry suffered properly from the shortage.) Rare earth ores are also found in South Africa, India, Brazil, even California; China has only a third of the world's ore reserves. But mining the deposits of rare earths in places other than China is complicated by the fact that such mining involves the creation of vast quantities of toxic radioactive waste, and China seems much more willing to incur such environmental damage than, say, the United States. Thus the entire world is dependent on China's whims for its supply of these vital elements.

Of course, when a rare and desirable commodity is kept under government control like this, smuggling is an inevitable consequence, even in a tightly regulated country like China. It's been estimated that close to half the world's supply of heavy rare earths is illegally exported from China, and one seventh of the light rare earths. The Chinese government is, naturally, distressed by this. In the north, at Baotou, it has begun to discourage smuggling by putting up electrified fences around the dysprosium mines. Preventing illegal rare-earth traffic in the southern provinces has been more difficult, because a wild, lawless atmosphere prevails down there and local officials are thought to collude with crime syndicates

to carry out illicit strip-mining and refining of the substances. Late in 2010, therefore, the central government announced that it was placing the southern mines under national authority. The ostensible reason was environmental protection—even though radioactive waste is not a significant issue in the south, the pirate miners were ruining the landscape in other ways, flagrantly ripping up hillsides and dumping acid-rich mine tailings into local streams and rivers—but the chief effect of the takeover was to give the Chinese government absolute control over these valuable mineral deposits. Whereupon China's tight export restrictions on the rare earths became even tighter.

What to do? How to assure a steady flow of rare earths to the factories of the western world?

President Obama took the issue up with President Hu Jintao of China during Hu's visit to Washington in 2010, but was unable to extract any sort of rare-earth trade agreement from him. The administration has also appealed to the World Trade Organization, asserting that China is illegally limiting its rare-earth exports in order to stimulate its sales of green-technology apparatus, in which several rare earths are used. (The WTO prohibits export quotas that are designed to favor the exporting nation's own industries.) Since China claims that its mining of rare earths has to be restricted because it does environmental damage, environmentalists find themselves in an odd conflict on that point: protecting the environment in China brings about a reduction in the supply of equipment used in cleaning up other parts of the world.

Meanwhile everybody is stockpiling rare earths against the day when no more exist to be mined, China included, and that makes current supplies even scarcer. China wants to build a stockpile of one hundred thousand metric tons of various strategically important rare earths. Japan and South Korea are amassing reserves also, and the U.S. is talking about a similar project. This

hoarding, by itself, is driving the price of these much-craved elements even higher.

One compensating factor is the current construction in Malaysia by Lycas, a giant Australian mining company, of a huge plant for refining rare-earth ore—the first such facility to be built in almost thirty years. Malaysia has already had a bad experience with rare-earth refining: its last refinery, operated by the Mitsubishi Corporation of Japan, left an enormous radioactive wasteland all around it that has required an immense cleanup program. The new plant will make use of advanced refining technology that Lycas hopes will minimize the local environmental hazards the process entails. Malaysia was so eager for the new refinery that it offered Lycas a twelve-year tax holiday. Perhaps, when it is in production, it will mitigate the current shortages somewhat. And in the United States, a company called Molycorp intends to mine and refine rare earths near Death Valley, where the environment is pretty bleak already. Molycorp knows that it must avoid turning the area into the sort of toxic wasteland that surrounds the Chinese rare-earth facilities, and thinks that it can. Programs are under way, also, to recycle rare earths from defunct electronic gizmos—Japan alone sees hundreds of thousands of tons of these objects as reclaimable.

One way or another, we will manage to come up with the supplies of rare earth that will be needed in the years just ahead, though it may require some political head-butting and even—mark my word—a little relaxation of certain environmental restrictions. But the key phrase here is in the years just ahead. Science fiction has taught us that it's a good idea to look beyond the years just

ahead, and what we see, peering down the line into the infinite future, is a continuation of the unending war between scarcity and human ingenuity that has been driving technological progress for thousands of years. We may think of our supply of metals, both the common ones like copper and zinc and the obscure ones like samarium and lutetium, as endlessly available for our needs. They aren't. Already, as I noted at the beginning of this piece, we are seeing the first surprising signs of a shortage of copper and zinc. Samarium, lutetium, and the rest of the rare earths are even more troublesome problems, since the sparseness of supply is complicated by the political and environmental issues that I've outlined above.

Eventually, and I can't tell you how far away "eventually" might be, all of Earth's metals, both the rare ones and the common ones, are going to be very rare indeed, and we will have pushed our recycling efforts to their limits. What will happen then? Will a time come, thirty or fifty years from now, when all the smartphones will have to be tossed on the scrapheap because there's no more dysprosium? Or will some future Steve Jobs spark the development of dysprosium-free phones powered by hydrogen or carbon dioxide? (Breathe into your phone to charge the battery!) Will we get back into space and go prospecting in the asteroid belt for gadolinium, holmium, and promethium? Will we come up with some other miraculous fix that we can't even imagine now?

I don't know. So far, the human race has been pretty good at wiggling out of tight corners like this. But every year there are more of us and less of the natural elements out of which we have constructed our civilization. Something, I suspect, has got to give. ○



SON OF EBOOKS, THE NEXT GENERATION, VOL. III

told ya

My wife claims this is my I-told-you-so column, and, as usual, she's probably right. However, I prefer to think of it as my even-a-broken-clock-is-right-twice-a-day column. Mine was certainly not the only voice proclaiming the coming of ebooks when I first wrote a column about them way back in 2001. But here's the first paragraph:

"Okay, it's time to get serious about online science fiction. New and reprint sites are popping up like mushrooms after a monsoon. Hardware and software companies are offering new, or at least *improved*, technologies to ease the strain of eyeballing print on screens." And here's a bit from the end: "Perhaps the most difficult problem e-publishers will face is finding a way to make money selling fiction on the net. Information wants to be free, or so they say. And if it isn't free, any number of netizens are willing to find ways to set it free. Hackers and data pirates have some print publishers scared silly....

"Writers too will face challenges. Will we see a kinder, gentler online publishing industry, one that is less driven by a best-seller mentality? A publisher of ebooks has no need of a warehouse or a distribution system that deals with moving atoms from here to there. She can afford patience with a book, giving it time to find its audience. But then how will ebooks find their audiences? Even if only a fraction of the greatest hits of the science fiction backlist becomes available, it will flood a market that already offers far, far too many choices." Skeptics scoffed, and they were the vast majority, even

among the net's digerati. The astute **Jeff VanderMeer** <jeffvandermeer.com> conducted a survey about books in 2003, posing a series of questions to practicing speculative fiction writers. **The Physicality of Books** <fantasticmetropolis.com/i/books> appeared online on the wonderful Fantastic Metropolis—which has since become, alas, a ghost site. The survey is something of a love letter to a technology whose prime was about to pass; in it many of your favorite writers express their deep feelings for printed books. When asked whether it was *necessary* for such books to exist as physical objects, most asserted that it was, citing the many real failings of ebooks and their delivery systems. They weren't portable and were too hard on the eyes, too fragile, too immaterial, not at all like our dear old paper books!

Even in 2006, true believers were thin on the ground. Here's the opening of my column from then: "Although ebooks have come a long way since we last discussed them in March of 2001, many pundits would cite their perceived lack-luster performance in the marketplace as proof that they were just another dot.com fad. Well, it ain't necessarily so. Sales of ebooks rose 27 percent in 2003, to \$7.3 million, according to *Publisher's Weekly*." Later in that column, I advanced what I called "The Two Certainties," cribbed from my friend Cory Doctorow: "1. More people are reading more words off more screens every day. 2. Fewer people are reading fewer words off fewer pages every day. The consequences of The Two Certainties are profound: at some point the ascending digital line must cross the descending print line. Not if, friends, but

when. The Two Certainties point to a future in which ebooks inevitably dominate paper books."

When, as it turns out, is probably now, or maybe next Thursday at the latest.

kindling

While those of you reading this on an iPadKindleNook are still just a fraction of all 'Mov's readers, you are an increasingly significant fraction. Which brings us to one problem with assessing the impact of electronic publishing on print publishing: it is hard to know how many of those who take this magazine in its electronic form might otherwise have bought the print version. What is clear, however, is that many of those reading ebook versions of this and other print books and magazines are new readers, or perhaps readers who have been wooed back to reading by the convenience and ubiquity of ebooks. A 2010 Harris Poll <harrisinteractive.com/vault/H1-Harris-Poll-eReaders-2010-09-22.pdf> found that about 10 percent of Americans owned an ereader and another 10 percent intended to acquire one shortly. Even more interesting to writers and publishers is that owners of ereaders read more and buy more books than the average.

Polls like these have helped give ebooks some serious buzz, but even as we discounted uninformed skepticism in the early days, it's a good idea to take today's exuberant optimism with many grains of salt. There is a lot of information out there for the armchair pundit, but how to interpret it? For example, recent monthly statistics from the Association of American Publishers <publishers.org/press/38> show that adult hardcover and adult paperbacks and ebooks rank first, second, and third in revenue respectively in trade books. The hard numbers? Adult hardcover: \$111.4 million, adult paperback: \$95.9 million, and ebooks: \$72.8 million. Obviously, it's a bit premature to crown ebooks, at about 17 percent of trade net revenue, as the new

publishing champ! Monthly revenue from ebooks one year prior, however, was just \$28.3 million. This 157 percent increase is even more astonishing in light of the fact that net sales for all trade categories declined 2.4 percent. Is it any wonder that the title of the 2011 annual Conference of the AAP's Professional and Scholarly Publishing Division <publishers.org/_attachments/docs/library/psp_winter-spring_2011.pdf> was "Digital or Die; Inventing Our Future"?

But what inventions will help them invent that future? The research firm InStat <instat.com/newmk.asp?ID=2852&SourcID=00000652000000000000> claims that ereader shipments will jump from 12 million at the beginning of 2011 to 35 million in 2014. Meanwhile it projects tablet shipments to reach "approximately 58 million" by that date. However, Informa Telcoms and Media <blogs.informatandm.com/1420/press-release-e-readers-to-lose-out-to-smartbooks-in-battle-of-the-tablets> expects "mobile broadband ereader sales will peak at 14 million units in 2013, before falling by 7 percent in 2014 as the segment faces increased competition from a wide range of consumer electronic devices." Will our digital libraries come to live in ereaders or tablets or something that doesn't even exist yet?

do it yourself

Even as publishing bosses scramble to understand the changes that the ebook revolution is making to their business, literary workers (i.e., writers) are being offered access to the means of production. Through ventures like Kindle Direct Publishing <<https://kdp.amazon.com/self-publishing/signin>> and PubIt <<http://pubit.barnesandnoble.com>>, it is now possible for anyone to write, publish, and sell an ebook. It used to be that self-publishing was a dirty word—or was it two dirty words?—but now it's where some claim the smart money is. Established writers with an inventory of out-

of-print novels and stories can bring them back under the light of readers' eyes for a minimum amount of effort. Unpublished writers can bypass the fierce editorial trolls who once guarded the gates of Literatureland. Is this a good thing?

Yes, lost treasures will be rediscovered. Idiosyncratic new talents will emerge.

No, so many choices will lead to reader paralysis. The ratio of noise to signal will soar.

All of the above.

While many of my entrepreneurial colleagues have leapt into the digital marketplace, more have held back because they don't control their electronic rights or because they perceive epublishing as too complex and time-consuming. After all, it's a daunting enough life task to learn to write well—now we're supposed to understand the difference between an **epub** <wikipedia.org/wiki/EPUB> and a **mobi** <wiki.mobileread.com/wiki/MOBI> file? Novelists, particularly those who have managed to hold on to their electronic rights, have discovered that bringing their oldies but goodies back can be a lucrative sideline to their careers. But this is *Asimov's* and we're all short fiction fans here, right? The prospect for making money posting short fiction ebooks is somewhat less rosy, but that hasn't daunted some of the best and net-savviest short story writers working today.

Take for instance, **Tim Pratt** <timpratt.org>, who is most familiar to readers of this fine publication for his Hugo-winning story "Impossible Dreams" from the July 2006 issue. You can read this great story today on the Nook and Kindle as a solo ebook for a mere \$.99, or you can buy it in his collection, *Hart & Boot & Other Stories*, which includes the title story, selected for the *Best American Short Stories 2005*. Your cost for the collection: \$2.99. Tim wrote some advice for would-be self-publishers: "My single stories on Amazon sell vastly better than my collection, even though the collection is a dozen stories for \$2.99, as opposed to

.99 cents each. So I would recommend posting stories individually. Some stories only sell a handful of copies per month, and some sell into low triple digits. I've only been selling them for two months, but it's definitely brought in some grocery money." Or **Tobias Buckell** <tobiasbuckell.com>, whose wonderful stories are not only available on the major ebook vendor sites but on his own popular site as well. He has been experimenting with unbundling his collection *Tides from the New Worlds*, by putting individual stories up for sale. He writes "(The collection) had settled into a forty to fifty dollars a month pattern of royalties. Since releasing the single shots, it has plunged to half that. So selling the singles certainly affected that. I saw Tim Pratt mention his own singles experiment on twitter. He released a bunch of them and flooded in quickly, and he's seeing better results. Looking also at sales and how they seem to cluster, my take is that readers are buying one, liking it, buying another, and moving through the stories quickly. Although it would be cheaper to buy the short story collection, the initial 99 cent value proposition creates demand." For the record, my own self-published ebook sales are roughly in line with Toby and Tim's.

exit

You can get *Asimov's* on just about any e-reader, but did you know that Sheila has started creating special e-anthologies of stories that have appeared in these pages? *Enter A Future: Fantastic Tales from Asimov's Science Fiction* is available now; more will be forthcoming. Meanwhile, you can buy individual ebook stories for a buck by Michael Jasper, Eric James Stone, Kristine Kathryn Rusch, Mary Robinette Kowal, Nancy Holder, Jeff VanderMeer, David Brin, Jeff Carlson, George Alec Effinger, and Robert Sheckley, to name but ten.

Oh, and FYI: ebooks are here to stay. You read it here first. ○

BRUCE SPRINGSTEEN

Paul McAuley

Paul McAuley worked as a research biologist in various universities, including Oxford and UCLA, and was a lecturer in botany at St. Andrews University, before becoming a full-time writer. His latest novel, *In the Mouth of the Whale*, will be out from Gollancz in January. Paul tells us that his favorite Springsteen album is *Nebraska*; his favorite song is "Darkness on the Edge of Town."

"I like your philosophers," the alien said. "Most were unintentional comedians, but a few were on to something. Baudrillard, for instance."

I said that I wasn't familiar with Mr. Baudrillard's work.

"His speculations about things standing for things that do not exist were relatively sophisticated. Perhaps you will resurrect him one day. He and I would talk about where his ideas fit in the spectrum of simulacrum theory."

I said it sounded interesting.

"You are being polite because part of your profession is to listen to the confessions of strangers. But you do not know what I am talking about, do you? It does not matter. I am mostly talking nonsense. I am free-associating. An effect of this interesting drink."

"Are you ready for another?"

"This one is still working on me," the alien said.

A shot glass of neat Seagram's was balanced on top of his tank. Somehow, elements of the whisky were making their way out of the glass and into whatever was inside. According to the alien, a teeny-tiny demon was influencing space-time, inflating the usual, vanishingly small chance that certain molecules would be somewhere outside the glass. Not molecules of alcohol, but what he called congeners. He was getting a buzz on the complex chemicals that gave the whisky its unique taste.

The alien was a !Cha, of course. They'd made themselves known to the human race some five years ago: the second species we'd met since the Jackaroo had given us a gateway to the stars. One moment, there were no aliens on First Foot apart from a few Jackaroo ambassadors; the next, !Cha were tick-tocking all over the place, asking questions, paying people to tell them stories, telling fantastic and improbable stories about long-dead species that had preceded us, of empires, and wars, and alien versions of the Rapture.

This one had stalked into the Deadwood Gulch Roadhouse and Casino like it wasn't anything unusual and headed straight past the slots and video poker ma-

chines and the tables. Four in the afternoon, the place pretty much dead apart from the regulars at the slot machines and a couple of truckers playing blackjack. Hardly anyone paid attention as the alien went past, his squat black cylinder raised up on three skeletal legs like a miniature Martian fighting machine, heading to the Last Roundup bar at the back of the roadhouse's dim barn, where I was working on my own. The day manager, Li Hui, came over and told the !Cha that drinks were on the house, gave me a look that told me it was my problem, and left me to it.

I'd seen plenty of !Cha around Mammoth Lakes, but this was the first I'd talked to. It called itself Useless Beauty, claimed that it was a collector of human foolishness. Whatever that meant.

Saying now in its mellow baritone, "My favorites of your philosophers are Dr. Seuss and Samuel Beckett. Both are very good on the absurdity of life."

"I know Dr. Seuss."

"Seuss is very funny, but Beckett is even funnier. Especially his piece about two dispossessed waiting for the person who stands for their release or redemption. The person who never arrives. Who represents the things they can never have. Very funny." The !Cha turned on its stool, and with a curiously human gesture flapped the terminal joint of one of its legs. "One of your customers is 'smoking.' An interesting transgression."

"Give me a second while I tell her to put it out," I said, and went and did just that, before Li Hui came over to give me trouble.

She was blond and tanned, somewhere between thirty and fifty, dressed in a dark blue skirtsuit, the blouse under it just the decent side of translucent. She'd definitely had some work done around her mouth and eyes, and I was pretty sure her breasts weren't original. She'd come in a little after the !Cha had settled at the bar, ordered a vodka gimlet and asked if she could run up a tab, shrugged and paid cash when I explained that we didn't do that on the wild frontier.

Now, when I asked her if she could put out her cigarette, she immediately stubbed it on the side of the packet and smiled and said, "I've been sitting here trying to work out how to get you away from that thing."

"It worked, ma'am. But don't try it again. You'll get us both into trouble."

There was a moment of distraction, then, as the !Cha unfolded itself from its stool and stalked off. Sunlight flashed for a moment as it went through the doors; then the roadhouse was plunged back into its perpetual twilight.

The woman leaned close, giving me a good view of her cleavage and enveloping me in her perfume. She read my name off my staff tag, said, "I'm Rachel. Tell me about your idea of trouble, and I'll tell you mine."

Inside of ten minutes, I'd told Rachel that I'd come up to First Foot two years ago, that I'd kicked around Port of Plenty doing odd jobs, window washer, shrimper, security guard, and ended up at Mammoth Lakes, working at the Deadwood Gulch Roadhouse and Casino. It was a low point in my life. The roadhouse was way out at the edge of town, your first chance to lose some cash on the way into Mammoth Lakes, your last chance to make that final life-changing wager on your way out. Most people went right on by. The owner was waiting to sell the site and his license to one of the big operators; half the staff were drunks and burnouts; the rest, like me, were trying to stretch minimum wage and tips into a stake that would buy their way into a job with one of the casinos on the Strip.

Rachel finished her vodka gimlet. When I asked if she wanted another she pushed a five-yuan bill into the well. There was a number written on it in lipstick. "That's my room," she said. "I'm at the Stardust Motel. When do you get off?"

And that was that.

I can't say I was ever in love with her, but there'd been a spark between us from the first. A connection. It wasn't just the weirdness of having an alien turn up at the bar and ask for a shot of Canadian whisky. Well, that was part of it, but the plain fact of the matter was that Rachel was very definitely my type. Older than me by five or ten years, easy with what she was. Someone who'd lived a little and taken some hard knocks, but knew how to look after herself. Someone, I thought, who was passing through. A change from the waitresses and kitchen staff.

We spent all night in her room. Sex, talking, more sex. Pizza, most of a bottle of vodka. Somewhere in there I fell asleep, woke with sunlight falling through the blinds and striping my chest, and knew that I wasn't going into work that day. It was a good feeling. Rachel was next to me in the bed, propped on one elbow. She had green eyes. Green as the most expensive lawn grass back on Earth: contacts.

"Hey," she said.

"Hey."

I realized I didn't know much about her but her name, and the deep jones she had for Bruce Springsteen. We shared the last of the vodka cut with warm orange juice, and over this breakfast of champions we got to know each other a little better.

It wasn't just that she liked Springsteen's music and fancied the pants off of him, Rachel said: his songs had helped her understand America when she'd moved there. Although her accent sounded half Californian, half Australian, she was a Brit who'd spent ten years in New York, working in the antiques trade, before she'd won the lottery, come up, and made it big, not once but twice.

First time, she'd used her contacts in New York and London to set up a very profitable export business dealing in alien artifacts, but then she'd made the mistake of getting married, and her husband and her accountant had conspired to rip her off, and they'd squandered everything they'd stolen on dumb land deals. So she'd started over, prospecting out in the City of the Dead, the hundreds of square miles of ancient tombs down south, in the American zone. She'd made decent money, mostly in those little touchy-feely artifacts you found all over, smooth little sculptures that gave you odd, pleasurable feelings when you held them. She'd parlayed that into a dealership, which she lost when her partner skipped out with cash made on a big deal, one of those unique finds that have the potential to kick-start new industries, like the bound pairs of electrons at the heart of the q-phone system.

"And that's how I ended up here with you, in a motel room at the wrong end of the Strip. We're like two characters out of one of Springsteen's songs. We both came here looking for new lives and found we couldn't escape what we are."

"What are we?"

"You're a handsome drifter. I'm a woman who's good at business but bad at love," Rachel said, and laughed when I said I thought she was pretty good in all the areas we'd tried so far. She had a nice, rough laugh. Saying, "This is sex, darling, not love. But I think you and I can get something done together. Are you up for a little adventure?"

She told me about the Henry Wu Memorial Museum, said that its security was ridiculously weak because as far as most people were concerned it didn't have anything worth stealing.

"But there's one thing that means a lot to me. Something I dug up early in my prospecting career. Something that could lead us to a fortune."

"Why me?"

"Why not?"

Rachel walked her fingers down my stomach and smiled when I responded, and we rolled together.

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* * *

Well, you know I said yes. Not just because I was dumb enough to think we were in love. But because she'd brought something rising to the surface. A hunger and a hopefulness I hadn't felt since I learned I'd won a lottery ticket off Earth, and every kind of new possibility had opened up.

Besides, I thought it would be easy.

It wasn't, of course. We broke into the museum at midnight. Two hours later, we were speeding out of town along the coast highway. We'd passed the checkpoint into American territory, a routine stop that terrified me much less than I'd thought it would. We had left two dead men behind us and Rachel was cradling the thing she wanted so badly while I drove as fast as I dared in her rented car and Bruce Springsteen played on the iPod plugged into the stereo, a compilation of all his big loud tracks.

Dawn was coming up, the sun huge and orange and pitted with spots around its equator. It was a lot smaller than Earth's sun, I'd read somewhere. An old, old red dwarf star. But it was much cooler than the sun, too, so that the Goldilocks zone in which First Foot orbited was close in, and from the surface its little red-dwarf sun looked eight times as big as Earth's.

The light woke Rachel out of her daze. She asked me if I was okay, driving. I said I was. It helped me to not think about what had happened.

"What happened, happened. We have to deal with it," she said. As if she was talking about a minor inconvenience, like a snapped heel on her shoe.

She switched off the music, fiddled with the radio, pulled in some breakfast show. Eventually the news came around. Right at the end there was a two-sentence item

about the break-in at the Henry Wu Museum, that persons unknown had killed two security guards.

"I guess the cops don't know who we are," I said. "Maybe our luck is changing."

"I wouldn't count on it," Rachel said.

She didn't say anything else. Sitting there, stroking the damn stone we'd killed two men for. It was black and smooth and oval. Sooner or later she'd tell me where we were going, and what we'd find when we got there. Meanwhile, I was happy to be driving. As long as I could do that, nothing else much mattered. Not even our two little murders. We were putting those behind us, mile after mile after mile. And ahead of us was only the road, aimed at the continent's empty heart. Human beings had barely scratched the edge of this world. There were plenty of places we could hide, on or off the map. With one decision, I'd opened up my life to endless possibilities.

Signs for a rest stop appeared. Rachel said she needed to freshen up, told me to pull over. The lot was empty apart from a pickup parked near a picnic bench, where a young couple was eating breakfast. Furniture and cardboard boxes stacked in its load bed, a German Shepherd lying under the grin of its chromed bull bars, sitting up as I followed Rachel toward the couple, a cold feeling growing inside me. The man stood when she pulled out her gun and the dog stalked toward her wolflike and growling, and she shot it.

I found a roll of parcel tape in the pickup's glove box and we used that to tie up the young man and woman. I had to whack the man on the head when he refused to hold out his wrists; after that they didn't give us any trouble. We dumped them among the boxes and furniture and set fire to the rental car and drove off in the pickup. Rachel took the wheel. She drove faster than I would have dared, those strange trees that grow along the highway there, like mushrooms grafted onto barrel cacti, whipping past on either side.

After a few miles, Rachel turned off the highway, followed a dirt track between trees and rocks to a rise where microwave masts clustered inside a corral of wire mesh fencing. We left the man and woman there, with a couple of bottles of water. The man was still mostly out of it; the woman was making noises behind her tape gag. We got back to the highway and drove on. Shadows shrinking as the sun climbed the dark blue sky where a few day stars shone. Cool air pouring through the open windows. Springsteen on the stereo.

I'd seen him once. Springsteen. One of his last concerts, at the end of a tour to raise funds to support research into climate change. Before the war, before the Jackaroo came and shrinking glaciers and homeless polar bears became irrelevant.

It was in Milwaukee. My hometown. My dad took me. It was a year after he'd finally split with my mom. I was twelve.

My dad was an accountant. Was? I bet he still is, if he's still alive, even though he went through the usual kind of midlife crisis involving an affair with a younger colleague, buying a motorcycle and an expensive leather jacket, staying up at nights drinking high-end scotch, and listening to his old CDs on headphones. Nodding along, rapping fractured beats on the arms of the chair, singing off-key snatches of lyrics. I felt sad for him rather than angry. And after he moved out, I found that I kind of liked hanging out with him in his downtown bachelor apartment, mainly because it meant hanging out with his girlfriend, too. I guess I was getting my first hormonal jolt.

Anyway, the concert. There I was, watching my dad bop in his seat in his good Italian leather jacket and his brand-new boot-cut Nudie jeans, one arm around his girl's shoulders, as Springsteen and the E-Street Band did their thing up on the big stage under fans of lights. Which wasn't my thing. If anyone asked at school I said I was

into trancehop, but I wasn't really into any kind of music at all at back then. Still, the spectacle and the energy, the sheer industrial volume of noise and light, did get to me. It was like being caught in a flood. You had to go with it. And at the center of it all was this wiry old geezer standing rigid at the mike, sweating hard as he sang and slashed chords from his guitar. Sweat gleaming on his face. Sweat spraying in a halo and catching in the lights when he shook his head.

I don't remember the songs, but I remember the rasp in his voice, the way he'd yell out *hyuh!* and the drums would come down and his band would swing in behind him. I remember the shine in my dad's eye, his stupid happy smile. But that was about all I knew about Springsteen until Rachel enlightened me, told me that he stood for the America that was all around you but which you didn't see or hear properly because it had been drowned out by Clear Channel and ten thousand cable channels with nothing on. That he articulated the hopes and fears of people caught in the traps of their lives. That he sang about small and personal rebellions that blew up or went bad, about how people had to live their lives in the wreckage of failed dreams, of how to survive in a country where the fantasy of winning is the first, last, and only prize . . .

Talking on and on as she drove down the four-lane highway that wound out of the mountains and straightened out across a great desert plain. Making little sense that I could tell.

Rachel was crazy, I knew, but I was crazy too. Something had broken inside me. I was out of the trap of the Deadwood Gulch Roadhouse and Casino. Out and free in an alien world under an alien sun. On the run with my woman beside me, and the strange prize she nursed in her lap. I had no idea if it was valuable or not, whether or not it would lead us to some kind of mysterious alien treasure. I didn't care. That we had it was what counted. Although I couldn't forget how we'd taken it, and what it had cost. Maybe that was what Rachel was trying to tell me, when she was talking about what Springsteen meant to her. I hope so. She didn't express any other kind of regret about what we did.

We'd broken into the museum at midnight. It wasn't hard. It had been a vanity project of the man who'd built it, an upside-down wedding cake of a building stuffed with alien artifacts. None of them were worth much. Henry Wu had lost his casino to maneuverings by officials in the pockets of one of the Chinese gangs who really ran Mammoth Lakes, the best of his collection had been stripped out, and the rest had been left to gather dust in that white elephant of a building. It was closed to tourists and marked for demolition because it occupied a prime spot on the Strip, but it was caught up in complex legal wrangles between the Chinese authorities and Wu's family. Like the roadhouse, it was stuck in limbo while Mammoth Lakes grew and changed around it.

We came in through one of the loading docks, where the big sliding doors were fastened with ordinary padlocks, and waited until a guard came to switch off the alarm. An old guy who, when we showed him our guns, sensibly put up his hands and said he didn't want trouble. But there was a second guard, young and keen, and he shot at Rachel as we came down the curve of the main ramp, and she shot back and nailed him in the leg, and followed the blood trail he left as he crawled toward the alarm box and shot him dead right in front of a big cylinder of armored Perspex glass that held in murky water an armature of carved bone taken from the floor of one of the lakes.

I remember seeing his blood run across the uneven concrete. Quick red tentacles of blood. I remember being in a bathroom, ripping off the leg of the tights Rachel had cut in half for me to wear over my head, leaning over a sink until the sudden gout of

nausea had passed. She'd painted a mask in tiger stripes with mascara and lipstick on my skin, but when I looked in the mirror and smiled it was my smile behind the red and black. Rachel came in, then. She was carrying the thing she'd come for. She said, "Your turn."

There wasn't much traffic on the highway. We were descending now, the highway winding between shaly slopes, crossing deep canyons on concrete bridges. Mostly we passed road trains, three or four loads towed by big tractor units with chromed exhausts like chimneys on either side of their cabs, chrome grills like fierce smiles, and names airbrushed in florid scripts on their doors. *Big Bob's. Easy Does It. Mack Attack.*

Rachel pointed one out to me. *Livin' in the Future*. She said that it was the title of a Springsteen song. A good omen. About all she said that afternoon, as the sun swung overhead and the highway left the mountains behind and crossed a wide playa. Drifts of sand on either side, sand blowing across the road, dry flats of sand and rock and dead-looking trees stretching ahead toward mountains that floated at the shimmering horizon.

Pretty soon, we were driving through the outskirts of the alien necropolis. The City of the Dead.

There weren't many tombs at first, and they mostly looked like clusters and clumps of rocks. Slumped, half-buried, overgrown by rings of thorn bushes. Then we passed a tract of square, slab-sided, flat-topped tombs as big as ranch houses, and I saw Boxbuilder ruins like soap bubbles stretched along to the top of a low ridge.

Rachel sat up and started to take notice of things. Cradling that black stone like it was a baby, stroking it. Pointing out tombs like staircases made of broken pillars, labyrinths that coiled around underground entrances.

I was driving again. I was tired, but it felt good. I was ready for anything.

The sun set. Prickles of electric light appeared ahead of us. A little desert town at a crossroads. Joe's Corner. We pulled up in the parking lot of a motel, the *Westward Ho!*, got a keycard from the Indian-from-India clerk, showered together, fucked slow and easy on the king-size bed with the TV on. CNN. Local news alternating with news from Earth. Rachel watching over my shoulder as we moved together, watching when we'd finished, sitting up against the padded headboard, naked and sweaty and tousled. That black stone on the nightstand beside her.

The theft and the two murders at the museum had dropped off the bottom of the local news cycle. There was no mention of the pyre we'd left behind at the rest stop, and when she used her phone to check the net she couldn't find anything about it there, either.

"We got away," I said.

"Not yet," Rachel said, and got up and started to pull on her clothes.

I asked her where she was going.

"Pizza first. Then we'll see."

She took the stone along with her, weighting the bottom of her sling bag. She had her gun in there, too. I had mine tucked in the waistband of my pants, covered by the hem of my sweatshirt. The way I'd seen it done in movies.

We paid for the pizza at the drive-in window of a place shaped like a flying saucer, like a couple of regular customers, and Rachel directed me to the edge of town, a rise looking out across the City of the Dead. The sky everywhere scattered with stars. The mountains to the east in saw-tooth silhouette against them. I wondered for the first time if we'd ever find out what lay behind those mountains.

Rachel talked about the stars. About where we were, thousands and thousands of light years from Earth. Talked about working out in the desert. The dust devils that

could blow up out of nowhere and smash and scatter your camp in half a minute. The hive rats that would swarm you if you put so much as one bootprint on their territory. The ghostly eidolons that inhabited certain tombs. The stark emptiness and silence of the land. The weight of centuries and centuries of inscrutable alien history. The Jackaroo had gifted this world to at least a dozen species of aliens before us. All were gone, now. They'd dwindled, or changed, or simply moved on, and we knew almost nothing about their stories. We only had what they'd left behind, and we didn't really understand any of it. We were the latest in a long series of experiments, Rachel said, and I thought of course of the !Cha, Useless Beauty. I asked her if she knew it, and she said that the first time she'd seen it was when she'd come into the roadhouse, seen me talking with it at the bar.

"But I didn't take much notice," she said. "I was watching you."

"That's nice."

"I mean it. I saw something in you. Something I recognized."

"Yeah."

"We knew each other before we met," she said.

We watched the stars. Their pale cold light fallen like frost on the playa, on the small and scattered shapes of the ruins.

At last, I asked her about the stone. Why it was important to her.

She told me that it was one of the things that had been stolen from her by her business partner. Something she hadn't thought about since, because she hadn't realized at the time that it was important. It was a nice example of the kind of shaped stone found in and around the tombs that harbored eidolons, nothing more than that. Worth maybe a hundred dollars. There were thousands of them, all chipped from the same seam of rock on some asteroid in the inner belt.

"I didn't know it when I first picked it up, but it spoke to me," she said. "And then it was stolen, along with everything else. I didn't think about it again until I came to Mammoth Lakes. Maybe it drew me there. I don't know. It definitely drew me to the museum. To the case where it sat with a hundred others like it. All of them dead and silent, except this one," Rachel said, thumbing the curve the stone made in the bottom of her bag. "I didn't know until I saw it. Until I recognized it. I have a good memory. I remember every one of my finds."

"What did it say? When it spoke to you?"

"Do you think I'm crazy?"

"I think we're both crazy."

Rachel was staring out of the windshield at the starlit necropolis. I waited for her to speak. I didn't much care why we here, to be straight with you. Or where we were going. I only knew that I was glad to be there. In that moment. In a stolen pickup that smelled of pizza. A gun digging into the small of my back. The freedom of not knowing what came next.

At last, Rachel said, "We call them soul stones. We think they're imprinted with some kind of quantum structure that generates eidolons. If you take away every soul stone you can find in a tomb, its population of eidolons is reduced. Not eliminated, so there's something else going on, but definitely reduced."

"By eidolons you mean I guess the dead. Dead aliens."

"If that's what eidolons are, yes. But we don't know that. They may be servants, memorializing the dead. Remnants of some kind of ceremony of interment. Representations of particular memories. We impose our stories on things aliens left behind, but we can't ever know the truth. What they really were, what they meant to those who made or owned them, how they were used . . ."

"But you know that it wants to go back."

"After we're finished here, we'll be free. We can do anything we like."

"It'll probably end badly."

"There's a song on 'Nebraska.' You know 'Nebraska'?"

"It's the only one of his I really liked. It had a lo-fi emo thing going for it."

But I was thinking about a different Springsteen song, from a different album.

Rachel said, "This one is about Charlie Starkweather, who killed a bunch of people to impress his girlfriend. It's a true story. There's a film of it, a good one. The song starts off about the movie version of the real story, and goes beyond both of them. It ends with Charlie on trial, asking the judge if he can have his girlfriend sit on his lap when he's strapped in the electric chair."

"My dad had this tribute CD. Chrissie Hynde sang that song."

"I like that version."

"I like it better than the original," I said.

We drove back to the motel. We watched TV. We fucked. There was an edge of desperation to it. We slept. In the morning, we drove to a short strip mall at the southern end of the little town. Bought potato chips and bottles of water and a few other things in a minimart, had breakfast in a diner. Rachel studied every vehicle that came and went in the parking lot. When a van parked in front of the souvenir store that anchored one end of the little strip mall, she told me to drink up my coffee, we had people to see, things to do.

The van's driver had raised the mesh shutters of the storefront and was unlocking the door when we walked up. A middle-aged overweight guy with pale hair combed sideways over his pate, strands fluttering in hot wind. He smiled at Rachel, asked her if she was working.

"I found a new partner," Rachel said.

"So I see."

The guy gave me an up-and-down glance. I smiled. The excitement was back. A parched taste in my mouth. A fat lazy hum in my head.

Rachel patted her bag, told the guy she had something for him.

"One of your specials?"

"Definitely."

"You want the right price, Rach, you know you've come to the right place."

"Why don't you unlock that door so we can talk inside?"

What she did when the guy opened the door was follow him inside and shoot him in the back of his head. One shot, all it took. There was hardly any blood: the bullet stayed in his skull. He dropped straight down and she stepped over him and used the butt of her gun to smash the glass top of the counter that ran along one side of the dim and cluttered store.

"Give me a hand," she told me. "Scatter things about. Make it look like a robbery."

"Isn't that what it is?"

Rachel threw a handful of small white pebbles on the floor, kicked them around, reached in for more. "It's a diversion," she said.

We spent a few minutes trashing the place. Grabbing alien trinkets from cabinets and scattering them across the floor. Pulling down a display of digging tools with a satisfying clatter. Tossing camping gear and T-shirts everywhere. Stamping on little wooden carvings of tombs. Smashing snow globes with plastic models of tombs sunk inside water.

As we left, Rachel tripped the alarm. We drove off to the sound of bells. People stood at the plate-glass window of the diner, watching us go.

Rachel was at the wheel, driving fast, driving straight out of town down a two-lane blacktop that cut north across the playa, turning off down a dirt road that climbed a low range of hills and cut between Boxbuilder ruins.

Within an hour, we'd left all trace of civilization behind, driving along tracks and gullies, across stretches of sand rippled by the wind, around a small fleet of crescent dunes. Deeper and deeper into the City of the Dead.

I didn't ask why she'd killed the storeowner, figuring that it was payback for some old grudge. Maybe he'd helped her ex-partner cheat her, or maybe he'd cheated her himself, once upon a time. I told myself it was none of my business. I told myself I was along for the ride, ready to help out when she needed it. And when she was done, we'd take off into new adventures.

We drove most of the day. Taking turns. Stopping now and then to look back at where we'd been, see if we were being followed. Eating and drinking at the wheel. The heat and the glare of the sun were brutal. I worried about running out of bottled water. I worried about running out of gas, kept the air-con low. Rachel didn't object, even though it grew so hot in the pickup's cabin that sweat evaporated straight off our skin. Whenever I took my turn at the wheel, Rachel got out her phone and checked it, then eased back, tipped the brim of the baseball cap she'd taken from the store over her eyes, and spoke only to tell me which way to go, or to remind me to skirt wide of rare patches of greenery: hive-rat gardens. Drive into one of those, she said, we might sink hub-deep in one of their tunnels, and their soldiers would open the pickup like a tin can.

In the middle of the afternoon, I heard a helicopter fluttering off in the distance. Here, there. After a couple of minutes, I glimpsed a distant glitter as it turned in the empty dark blue sky. We parked under a bank of coral trees that stretched scarlet, scaly limbs over the ruins of tombs shaped a little like old-fashioned beehives. While Rachel went off to take a leak, I watched the helicopter turn and turn again in the distance. At last, it cut away on a long eastward slant, and we set off again.

It was getting dark. The desert was waking around us. I saw a long sleek creature with eight legs slinking under brush, mouth long and narrow and crowded with teeth. A dire wolf, Rachel said. I saw a gout of things like bats made of crumpled tissue-paper spurt from a hole in the ground, twisting like smoke against the vast sunset. I saw something like a centipede the size of a python moving trainlike through the brush.

At last, Rachel drove the pickup over a low ridge that cupped a small U-shaped arroyo where a tomb sat in the middle of a spiral of stone walls. Rachel drove down the slope and pulled up at a broken part of the walls and we climbed out into the dusky air and dry heat. She was carrying a four-cell flashlight and had a sleepy look, but managed a small smile when I asked her if she was okay.

"We're almost done," she said.

I followed her through narrow winding roofless passages squeezed between the walls, to the entrance of the tomb. It was a ramp that sloped down into a well of black air under a domed roof overgrown with scrub. Bushes had grown up from old stumps around the entrance. There was a broken shovel and a sun-bleached plastic jerry can and other debris scattered about.

Rachel clicked on her big flashlight, used a broken branch to rake the bushes. When nothing jumped out at her, she pushed through and scrambled down the ramp. I followed her into a square dry space. Blocks of stone fallen from the vaulted ceiling tipped here and there on gritty black sand. Shadows shifted around us as Rachel pointed the flashlight here and there. Some of them kept moving after the beam of light had passed. Small figures emerging from angles and cracks in the stone-block walls, about the size of spider monkeys I'd seen at the Milwaukee zoo, one of Dad's less inspired post-divorce outings.

With a sound like whispering in a far-off room, the eidolons stepped toward us.

Nudging each other, twisting their hands together. They were as pale as cigarette smoke. Bands of tiny black eyes set above sphincter-like mouths turned to Rachel as she walked queen-like among them. Watching as she took out the soul stone and set it on the floor. When she stepped back, the eidolons flocked around the stone, pawing at it but never quite touching it.

There seemed to be more of them, suddenly, but it was hard to tell because they crowded so close together, wavering in and out of each other, faintly luminescent. I thought of cats, feeding.

"That's it," Rachel said. Her voice flat and small in that vaulted space.

"That's it? What about the stuff? The alien treasure?"

"It's somewhere else. Really."

We stood looking at each other, half-lit by the splash of the flashlight's beam.

I said, "I just want to be with you. You and me against the world. But no more stories about treasure. Okay?"

"We're nearly at the end of this story," Rachel said. She had that dreamy look again, but she spoke with clear certainty. "The stone is back where it wants to be."

"So we can go."

"Yes. We can go."

We were about halfway around the spiral of the labyrinth when Rachel pointed at the sliver of dark sky pinched between the walls. I looked up, and that's when she cold-cocked me. Hit me behind the ear with a solid blow from her flashlight, caught me on top of my head when I went down. I heard her say something. I'd like to think it was an apology. I heard her footsteps crunch on sand and grit, moving away. And that's all I knew for a while.

The man paused. He sat on the bunk bed that hinged out from one wall of the small death-row cell. He wore orange coveralls and his head was shaven and his stubble was dark against his pale skin. He told the alien, "I guess you know the rest."

"I am interested in every part of your story," the !Cha said.

His tank squatted low against the opposite wall, overtopped by the joints of its spindly legs. Fluorescent lights caged in the steel ceiling and in the steel walls picked highlights from the tank's black cylinder. There were no shadows anywhere, apart from a small one crouched under the bunk bed.

"It isn't really my story. It's hers. I was there, I went along. I did what I did. I never denied that. Never cared not to. I did what I did," the man said, with a sudden jut of defiance. "I shot that old guy. The guard. And I was responsible for the kid dying. When we left them, we meant for both of them to get free, but I hit him too hard. He was bleeding inside his skull. Went into a coma and never came out of it. So that's on me too. And I was there when she did her killing too, and never tried to stop her."

"And yet you are here, and she is not."

"I told you I'd tell you my story if I could ask a couple of questions. Here's the first. Your friend, Useless Beauty. He put her up to it, didn't he?"

"He is not a friend."

"You could be him. Those tanks all look the same . . . All you have to do is call yourself something else. Unlikely Worlds, say. Who would know?"

"I call myself Unlikely Worlds because that is the name I took when I came here. Useless Beauty is my rival. We compete for the same things."

"Whatever. He did a number on Rachel, didn't he?"

"No. The story was already inside her. The soul stone found it and made use of it."

"Right. You just like to watch."

"Something like that," the alien, Unlikely Worlds, said.

"She thought she was Charlie Starkweather. Well, I know she wasn't, but it didn't

matter what story she was following as long as that stone got back to where it was supposed to be."

"I imagine it matters to you."

"I thought we'd have a bunch of adventures until the law caught up with us. I thought we'd be together right until the end . . ."

For a while, the man was somewhere else. The !Cha waited. He had deep reserves of patience, and had paid the prison governor for all the time he needed. When he saw the man's attention come back, he said, "Your story did not end when she left you in the tomb."

"Now we're getting down to it, aren't we? Well, I'll tell you how it ended if you tell me something."

"That was always our deal."

"The truth. No evasions."

The man was fingering the stubble behind his left ear, where a faint white scar showed.

The !Cha said, "She hit you on the head. You lost consciousness. You woke . . ."

"I could hear the helicopter. I guess it woke me. That hard fluttering roar. I'd lost a lot of blood, and I was still half out of it, but I found my way through the labyrinth. Saw that Rachel had taken the pickup, no surprise there. I followed its tracks up that ridge in the near dark, saw the helicopter chasing the pickup's headlights out across the playa. She was driving fast, bouncing along in a shroud of dust. The helicopter was right on her tail. Flying low, shining a spotlight on her. I guess she was watching her rearview, because she didn't seem to see the headlights cutting in on her right. Or maybe she did, and she didn't care. . . ." The man was somewhere else again for a moment. He said, "She called the town's sheriff sometime when we were driving to the tomb. One time she went off to pee, I'm sure that's when she did it. The sheriff came looking for her on account of the murder of the storeowner, called in the chopper to help. And she called him again after she cold-cocked me, because he knew where to find me."

"And he shot her."

"I suppose you want to know how I feel about that. I don't blame him. She shot at him, what was he going to do? He T-boned her, smashed the pickup good, and she started firing through the broken windshield. I saw the flashes. Like stars going off inside the chopper's searchlight. She fired off an entire magazine inside half a minute. He fired back, that was it. I knew it was because the chopper landed beside the two vehicles, took off again, and came on toward the tomb. And I ran back inside," the man said. "I don't know why. I wasn't thinking straight. I had this idea there might be treasure inside after all, even though I knew there wasn't. But maybe something else was doing my thinking for me, you know?"

"Is that what you believe?"

"Wish I knew," the man said. "I got inside, started threatening the eidolons. I shot at them a couple of times, but they took no notice of course, being ghosts. So that was when I went outside and grabbed that old shovel, and started hitting the soul stone. Hit it and hit it until it split in two. Those eidolons went crazy. Whirling around like they were caught in a hurricane wind. By now, the helicopter was overhead, and its noise and its glare filled the entrance. I could see the stone was in pieces on the floor, and I picked up a sliver and I swallowed it. And no, I don't know why."

"And then?"

"The eidolons dropped down and scattered back into the shadows," the man said. "They were watching me. But as far as I was concerned, nothing happened. No revelation. No visions. Someone used the helicopter's loudspeaker, told me to toss any

weapon I had and come out with my hands up. I thought for maybe a second about shooting at them. But it was there and gone. The thing inside me, the thing that had risen up and taken me, it was gone. So I climbed up that ramp into the glare with my hands up above my head, and that was that."

"Not quite," the alien said.

"You mean my little friend," the man said, and snapped his fingers.

The shadow sidled out from under the bunk bed like a shy or sulky child, a smoky biped shape that bent and bowed, half-transparent in the harsh light, the glittering band of its eyes all the time fixed on the !Cha.

"There it is," the man said. "Bound to me, poor thing. And here I am, ready to follow Rachel. So, that's my story, for what it's worth."

"It is a good one. My rival will be displeased."

"Yeah? So why isn't he here?"

"He did not realize that your story is more important than that of the woman. That it is not from some fragment or template woken by the soul stone. It is all yours."

"And now it's yours."

"Now we share it."

The man said, "The scientists say something in that sliver bonded with my nervous system. That's why my little friend followed me out of the tomb. Because when I bonded with the stone, he bonded with me. You think that's true?"

"Is that your question?"

"Depends whether you can answer it."

"I know as much about the eidolons as you. Perhaps less," the !Cha said.

The shadowy manikin, squatting by the man's bare feet watched them talk.

"Some claim that inside that tank you're a school of little fish. Others that you're no more than a gallon of smart water. I was wondering which is nearest the truth. And no, that isn't my question either. Just simple curiosity."

"You are playing with me."

"We're playing each other."

"You started out as something like a fish, in your mother's womb," the alien said. "And most of your body is water. The truth is we are not so very different, you and I."

"We both like stories. Or think they're important."

"I value yours immensely, and am honored that you have shared it with me. Please. Ask me a question. I will answer it as truthfully as I can."

"Maybe another time," the man said.

"You have little time left."

"Even so. Maybe I want to go out with you owing me something. It would mean I'm not going out empty-handed, you know?"

"I will think about that, and try to understand." The alien pushed up on its three legs, knocked on the door to summon the guard, and said, "You don't always understand your own stories. That's what Mr. Springsteen's songs are so often about. People who don't understand the stories they are caught in. The Jackaroo think it will be your downfall. We think it is part of your glory. You don't understand your stories, and you search for their meaning, and sometimes that frees you to do something different. Something new. Something wonderful. As you did, when you smashed the stone and swallowed part of it."

"Didn't help me, did it?" the man said. "Know what they call out, when I'm taken outside my cell? 'Dead man walking.'"

"You could have chosen to die in the desert. And your story would have died with you. Yet it lives now, and will live on. Perhaps the part of you bonded to the eidolon will survive to see who is right. Us, or the Jackaroo."

"Wouldn't that be nice," the dead man said, with the trace of a smile. ○

Katherine Marzinsky is a student at Raritan Valley Community College, where she is majoring in English. She lives in Frenchtown, New Jersey, with her Shih-Tzu, Misty. In her first published story, a robot makes some heart-stopping decisions about what constitutes . . .

RECYCLABLE MATERIAL

Katherine Marzinsky

Howling with panic, an ambulance rounded the corner.

Ross's head swiveled to comprehend the intimate velocity. The ambulance swung so close it was easy to read the small words on its side. Willow Ridge Medical Center. Tires bumping over concrete. Changing air pressure. Expect the unexpected.

Though he made his best efforts to hold onto the white plastic garbage bag, Ross's fingers were never good at grasping weightless things. Ross watched his bag flail upward. Its opaque skin mirrored red light for a moment before getting lost in the darkness. A plastic wraith in a cluttered sky.

Ross put his hand to his forehead out of pre-programmed habit, as if affixing a hat, but he was in no danger of being blown away. Ross's body was heavy. He had once shattered a tile floor with his steps. Abandoned newspapers fluttered around the robot, but he remained solid.

Ross lowered his hand once the newspapers had settled. He could still hear the emergency vehicle, a half-mile down the road, its anxiety mingled with street noise. Loud and sleepless city.

Ross heaved a motorized sigh and dispensed another bag from his chest. He tore the perforated edge with undextrous metal fingers. Determined not to lose another piece of his utility, Ross stepped backward three paces; he looked down the road before fluffing the second bag.

Ross always learned from the unexpected. And that is why he was good. He was good at what he did. He was good at who he was.

Robotic Sanitation Services.

The ones who kept the city beautiful. The ones who cleaned up at night so the day could feel confident. Ross was necessary. And he was good. He was good because he learned from the unexpected. He was good because he was necessary.

Electricity and servos. Purpose and identity. Car horns and stray dogs. Ross began his journey down the sidewalk, garbage bag in hand. He scooped up a basket of discarded french fries oozing with a fluorescent substance that had once been cheese. Trash. He gathered the unconscious newspapers. Recyclable. Into the canister on his back.

The sporadic packs of humanity dominating stoops and storefronts paid Ross no mind as he passed. Robotic Sanitation Services was a well-known institution, a re-

spected company whose good and necessary workers had melded seamlessly with urban life. The robot lumbered by, squealing and belching exhaust, but no one heard him.

With one hand, Ross clamped a dead bicycle lying in an alleyway. Tangled metal. Multicolor streamers. He eviscerated the streamers, snap, snap, snap, and stuffed them into the bag. Trash. A bright orange sticker, tacky with industrial adhesive, printed from Ross's wrist. He stripped the rubber from the tires. Trash. He affixed the sticker to what remained. Notification for the others: recyclable material. The bicycle skeleton was too large for Ross. The canister on his back was not equipped for bicycles. Ross was good because he knew his limitations. Ross was good because he was efficient.

Slow progression down the sidewalk. Careful eyes. Meticulous attention to unnecessary rubbish. Ross neared a set of dumpsters. He passed them, knowing that objects contained in such metal coffins were not of his jurisdiction. Instead, he harvested the putrefying office equipment lying at their sides, in the open air. Copy toner and shame. Trash. He sorted a collection of crushed soda bottles. Redemption and polyethylene. Recyclable. All the while, Ross bent his wrist at an incredible angle. He swung his simian arm in a precise manner.

Ross moved on to the next alleyway. Objects too large for him. Orange stickers on cube refrigerators weeping freon.

And the next one. Apples, oxidized and brown, writhing with maggots, strewn across a cement stairway. Trash. A porkchop coated in breadcrumbs, also writhing with maggots, stuffed into a soggy grocery bag. Trash. A human infant wailing like the departed ambulance. The unexpected.

Ross narrowed his eyes; he twisted the high resolution cameras into focus. Reaching into the same paper bag with one hand, Ross brushed away clumps of bloody afterbirth, fresher than the porkchop, steaming in the winter air. He flipped the human garbage onto its side, toppling the paper bag. Something thick, like rotting cheese, clung to the infant. It howled. Its limbs flicked spasmodically.

Ross stepped backward and tightened his grip on his own trash bag. He began to print an orange sticker from his opposite wrist. The unexpected. Always new problems to solve. Ross was good because he learned from the unexpected. Ross was good because he could adapt. He could measure his gait to climb all kinds of stairways. He was efficient.

Wrapping cold, clumsy digits around the infant's chest, under its arms, between its kicking legs, Ross lifted it from the ground. It was light, difficult to grasp. The infant tried to reach for Ross's fingers, but its muscles were too new, too weak. More flailing. The legs began to slip.

The infant seemed to work. It could still move; it could still produce sounds from that speaker somewhere in its neck. Ross squeezed harder to prevent the object from falling. He gripped the soft newborn as he had gripped countless soda bottles. It was not trash. Ross completed printing the orange sticker. Recyclable material. Parts of the infant still worked. It was recyclable. Ross's legs had been built from the innards of old economy cars. He reasoned that the humans could use the infant in the same way. He affixed the orange sticker to the left side of the infant's face, covering its eye and one nostril.

Before setting the object down and continuing onto the next street, Ross froze. His mind clicked and whirred under the strain of its newest puzzle. The infant was small enough to carry. It would be inefficient to leave it for the others. Ross was good because he was efficient.

Ross whipped his arm backward. He dropped the newborn into the canister behind his shoulders. Thump. He picked up the fluid-soaked grocery bag as well; he threw it into his white plastic garbage bag. Saturated as it was, the paper was useless.

Three more streets. Moldy shoes. Trash. Coffee filters. Trash. Newspapers. Into the recycle canister. Hubcaps. Orange sticker.

Upon completion of his task, Ross dragged a bulbous trash bag with both hands and started toward his company's district receptacle. On the way, he detoured by one block to stop at the hospital.

The hospital was clearly the place of human maintenance, the refinery of raw flesh. Broken humans went in, transported by the ambulances; good humans went out, walking with efficient legs and lungs. The hospital was the processing plant the infant would require. No doubt.

When he entered through the easily accessible doors of the emergency room Ross was met with disgusted stares. An elderly man choked on the smell of coffee grounds and exhaust. A woman with red hair fell forward and vomited onto a pile of gardening magazines.

"I have an infant to recycle," Ross said, stepping carefully so as not to damage the floor. His voice was calm, a synthetic thing flecked with static. His trash bag scraped the linoleum.

The room went silent in the wake of the robot's proclamation, excluding some kind of distant beeping. The triage nurse cocked her head to the side and clutched her pager.

"You what?" she asked with a heavy urban accent.

"I have an infant to recycle."

The nurse did not move; no one said a word, so Ross dropped his trash bag and reached backward into the recycle canister. He pulled out the infant by its leg. Its cries rent the sterile air.

"I have an infant to recycle." O

TRAIN DELAYS ON THE SOUTH CENTRAL LINE

Movement creeps to a reptilian halt in the rusty gully;
in the antediluvian stillness broken only by the odd steamy hiss
obsidian-eyed commuters sit frozen in amber as
the archaic machine groans, shudders with effort
and, like its giant forefathers in Battersea
Power Station, sighs its last into industrial inaction.

Soon the green creepers that have claimed the viaducts
and the ropy trees in the margins will enter:
mosses growing over the back of the ancient monster
ferns wearing the wheels into decaying crumbles
until it stands, the stillness of the tropic scene
broken only by the sudden flight of chip packets
and the cicada shrilling of the mobile phones.

London
Between Balham and Clapham Junction Stations
—Fiona Moore

MAIDEN VOYAGE

Jack McDevitt

Jack McDevitt has been a regular Nebula finalist over the last twenty years. He is believed to be the only former Philadelphia taxi driver to win the award, which came in 2006 for his novel *Seeker*. Jack lives in Georgia with his wife Maureen, a German shepherd, and the requisite four cats. In his new story for *Asimov's*, Priscilla Hutchins—a central figure in the author's six *Academy* novels, premiering in 1994 in *The Engines of God*—is shown at the start of her career as she is training to pilot interstellars.

For Priscilla Hutchins, it was the experience she'd always dreamed of: her qualification flight, a mission that would take her to seven planetary systems, and ultimately to her pilot's license.

The most exciting destination, she thought, would be Fomalhaut, a white main sequence dwarf, about twice the size of Earth's sun, and sixteen times brighter. But that wasn't what had captured her imagination. Fomalhaut's system contained the first extrasolar planet actually seen through a telescope. It was a giant world, three times the size of Jupiter. But the real news came when we'd actually arrived in the system: the largest satellite in its family of moons was home to one of the alien constructs that eventually became known as the Great Monuments. Put in place by an unknown entity thousands of years ago. By the time of her qualification flight, a total of eleven had been discovered, scattered around the Orion Arm. They are magnificent sculptures, placed on moons and asteroids and small planets, and occasionally simply set in their own orbits. The first was discovered long before we had achieved interstellar flight. On Iapetus. It depicts a lizard-like female creature believed to be a self-portrait of the sculptor. And it was a major factor in restarting a long-stalled space program.

Since she'd been a little girl, Hutch had wanted to see the Iapetus monument, but she'd had to settle for turning out the lights in her living room and looking up at a virtual representation. She'd felt a kinship with the alien creature gazing placidly across that destitute landscape at Saturn, which was permanently frozen on the horizon. Never rising, never setting. Priscilla had sat on her sofa sipping orange juice. She didn't want to pretend to be at the site. She wanted to visit the place. To touch the stone image. To trace with her fingers the alien characters cut into its base.

No one had ever deciphered their meaning.

The monument at Fomalhaut was an abstract. A ring with an angled crossbar extending past the sides, mounted on a base. As always, the base had an inscription in characters no one had ever seen before. Not even on the other monuments.

It was made of rock extracted at the site, but the monument possessed an ethereal strain, heightened by multiple sources of moonlight, as if its natural habitat included trees, water, and the sounds of insects.

But before Hutch and the *Copperhead* got to it, there'd be a routine stop at Groombridge 1618 to drop off supplies and passengers.

Her parents had been unhappy when she'd announced her intention to pilot interstellars. Even her father, who'd arranged for her to touch the sky, had urged her to find, as he put it, a more rational life. She'd been disappointed in him, and it had caused a temporary split between them. In the end, he'd conceded, and he and Mom had thrown an unforgettable party for her. Lou Simmons, the boyfriend of the moment, had attended, and at the end of the evening, as they stood outside on the lawn of the family house, he'd asked her not to go, but instead to be his wife. She liked Lou, even though the long-term chemistry wasn't there.

"I love you, Hutch. Will you marry me?"

He'd stared at her, and she'd watched the dismay fill his eyes. And the frustration. And she'd thought how this might be one of those decisions she'd revisit over the years, and eventually come to regret.

"What are you thinking about, Hutch?" asked Jake.

It brought her back to the bridge of the *Copperhead*. She was in the pilot's seat. The scopes were picking up only the gray mist that filled the transdimensional space that allowed vehicles to move among the stars.

"Nothing," she said.

Jake Loomis let her see his disapproval. "Okay, Hutch. Six minutes to jump." He was seated beside her.

"Okay."

"Best keep focused when stuff is happening."

"I'm focused," she said.

"Benny's good." The AI. "But don't assume nothing will ever break down. If something goes wrong out here, it tends to happen very quickly."

"Okay, Jake."

He waited. Expecting her to say more? Then it came to her. The passengers. She touched the allcom pad, trying to look as if she'd been about to do that anyhow. "Professor Eddington," she said, "Dr. Andrews, Isaika, we'll be transiting back into normal space in five minutes. If you need to do anything, this would be a good time. Then belt down."

She glanced over at Jake. He pretended to be looking at the fuel gauge. "Benny," she said, "start engines."

Jake was a true believer. She suspected he was one of those guys who'd never walk away from the interstellars. He was a big man, with dark skin and black hair and an easy-come easy-go attitude. His eyes had a kind of whimsical look, implying that he did not take her seriously. Did not really trust her. "Benny can get you through most missions," he told her, "but if a problem develops you need to be ready." There was something in the way he stressed the last word that underscored his doubts about her.

Hutch had no reason to question her own capabilities. She had done well through the eight-month program leading up to this final mission, in which she would be expected to function as the captain, while Jake served purely as an observer. The guy who filled out the score sheet.

"Jump in one minute," said Benny.

The panel was showing a red light. One of her passengers had not yet belted in. "One minute, everybody," she said. "Larry, get into your harness." Dr. Larry Andrews preferred being addressed informally.

"Doing it now, Captain," he said.

They all thought, or pretended to think, she was actually captain of the *Copper-*

head. Jake had been good that way. He'd implied he was just along for the ride. That Hutch was in charge. It had boosted her confidence. She loved being called "Captain." But she understood that her reaction was a clear demonstration of her immaturity.

Larry's lamp turned green.

"Thirty seconds," she said.

She activated her own harness, and Jake settled back in his seat. He'd been about to remind her. But she hadn't forgotten. Almost, but not quite.

The engines changed tone. "Transit initiated," said Benny.

The gray mist dissipated. The navigation display went dark. And a multitude of stars blinked on.

Moments later, the AI broke in: "Hutch, we have a message from the Academy."

"What is it, Benny?"

He put it onscreen:

JAKE, FYI: WE JUST GOT WORD THAT THE HOLD ON THE QURAQUA TERRAFORM IS GOING TO BE RESCINDED. THAT MEANS YOU MAY BE BRINGING A COUPLE OF PEOPLE BACK WITH YOU. FRANK.

Frank Irasco was the director of operations. And Quraqua, of course, was an Earth twin. An ideal colony world. But it had ruins dating back thousands of years. It was dry, and the corporates wanted to make it attractive to settlers. Terraforming would mean a cool pleasant climate, with modular beachfront homes. And sure it would put a lot of the ruins underwater. But what the hell?

Hutch stared at the message. The battle over revamping that world had been going on for years. Archeologists wanted to preserve the ruins. But Quraqua would be a priceless asset as a colony. She sighed. "Welcome to Groombridge, Jake," she said.

Technically, it was Groombridge 1618. Eight light-years from Earth. An orange-red main sequence flare dwarf. Hutch had done her homework. The star was still young, less than a billion years old, and though it was smaller and less luminous than the Sun, it threw off flares that were far more intense than anything seen at home. And the eruptions were frequent.

That was, indirectly, the reason it was of particular interest to biologists. Because it was so much cooler than the Sun, the "Goldilocks" zone, where liquid water could exist, was much closer to it, running from thirty-eight to seventy million miles. That brought any potential life-bearing world within range of the flares, where no terrestrial-style life could exist. Groombridge II, Hibachi's World, was right in the center of the zone. It had two moons, a big one and a small one. And, remarkably, it also had tangled jungles and as wide a diversity of animals as existed at home. No deserts or open plains presented themselves. The only land areas that were not overgrown were at the poles. Biologists loved it, and had spent the past five years on the planet trying to figure out how it had happened.

"We have most of the answers now," Larry told her. "We're at the point where it's just a matter of filling in the blanks." He floated behind her, holding onto the back of her chair, watching the planet grow gradually larger on the display.

She swung one of the scopes toward the sun. It looked tranquil. Sedate. "Just how serious are the flares?" she asked.

Larry was tall, thin, self-effacing. He was probably in his early thirties, but his hair had already begun to gray at the temples. He spoke in a relaxed, amiable tone. "Pretty severe," he said. "Fortunately, you normally get some advance warning before the thing goes off, so that gives everybody time to get under cover. But it limits what you can do."

Jake pushed back in his seat. "You wouldn't want to be out walking around in it, I assume."

"Probably not, Jake. I was glad to see they put the extra armor on the *Copperhead*. I doubt we'll need it, but you never know."

Hutch suppressed a smile. The extra armor lining the ship was for Palomus, a pulsar, where they'd be dropping off supplies in a few weeks. But she said nothing. "How long will you be staying?" she asked. She knew Larry had two young kids.

"Probably a year."

"The vegetation's not green."

"Can't have chlorophyll. Not in this kind of environment."

Had she made the same comment to Eddington, she'd have gotten a detailed explanation, filled with descriptions of protective coatings, energy collection methods, alternative genealogical systems, and who knew what else. Eddington was an oversized guy, big and unwieldy in every sense of the word. He could barely make it through the hatches. He'd been out here before, and he talked constantly about the experience, retelling the same stories.

Isaika Nakamura, the third member of the party, was an engineer. She was middle-aged and bored. She'd come along to inspect, upgrade, or repair—Hutch wasn't sure which—the systems protecting the shelter. She had no apparent interest in the mission itself, and she let everyone know that she was part of the mission because she'd lost a coin toss.

They had emerged about eight hours out from Hibachi's World. The passengers slept and read. The ground station was the Erik Acharius Complex, named after the nineteenth century Swedish botanist. Hutch opened a channel. "Acharius," she said, "this is *Copperhead*. We have arrived and will enter orbit around midnight your time. How are you doing?"

A burst of static. Then: "We're fine, *Copperhead*." The voice sounded energetic. It belonged to a young male. "Looking forward to seeing you. Who am I talking to?"

"Priscilla Hutchins."

"Nice to meet you, Priscilla. I'm Ollie Evers. It'll be good to have some company. We don't get many visitors out here."

"How long has it been?"

"Since the last supply ship?" She heard him turn the question over to someone else. Then he was back. "Seven months, Priscilla."

"Well, Ollie," she said, "the glories of working for the Academy."

"Absolutely."

"How's the weather?" She was referring to flares. The station maintained a satellite in geostationary orbit to monitor Groombridge.

"You're clear. If we see any problems, we'll let you know post haste."

"How reliable are the predictions? You get a reasonable advance warning?"

"Usually. Shouldn't be a problem. We've never lost anybody."

"Glad to hear it."

There was a long pause. She was about to ask if he was still there when he came back: "When you get here, Priscilla, we'll have a surprise for you."

Jake was signaling her, pointing back into the cabin. The meaning was clear enough. Invite Eddington and the others to participate in the conversation.

"Hold on, Ollie." She activated the allcom. "Guys, we have Acharius on the circuit. Anybody want to say hello?"

Eddington took over and immediately began asking questions about genealogical strains in local amphibians. Hutch shut off the mike and turned down the sound. Jake folded his arms and sighed. "He does like to talk."

Hutch nodded.

Jake was quiet for a minute. Then: "What made you decide to do this for a living, Hutch?"

"I don't know," she said. "Why do you ask?"

"Idle curiosity."

She considered the question. "My dad's an astronomer."

"Oh," he said. "*Jason* Hutchins. I should have realized."

"Yes. He's pretty well known."

"He's the guy who heard the artificial signal."

"It's a lot of years ago now."

"And that's what got you interested in piloting interstellars?"

"It helped."

"But nothing ever came of it."

"That wasn't the big thing."

"What was?"

"When I was about six or seven, he took me to the Moon. That was before the signal came in."

"You must have enjoyed that."

"I *loved* it. Never forgot it. I remember standing out there with him on the rim of a crater. How old's the crater, Daddy? Millions of years, kid, he said. I don't think I knew what a million was, but he described a place that never changed. I still remember his saying that time stood still out there. And I could *feel* it. A place where clocks didn't run. It was incredible, Jake. When I got home, I kept thinking about it. You know, the other kids, they played ball and sat on swings and never looked above the rooftops. Later, they were all talking about becoming lawyers or getting degrees in business management. Me, I never wanted anything other than what I'm doing right now."

Jake smiled. "I think you're going to find it's not as romantic as it sounds, Hutch."

"How do you mean?"

He shrugged. "You ride for weeks or maybe months inside a sealed container. You take archeologists to Quraqua, or carry supplies out to Palomus and hope you don't get radiated in the process. Then you go home and do it again. Don't misunderstand me. I wouldn't change a thing. But it isn't what it looks like in the movies. No space pirates or green aliens or anything like that."

"You make it sound boring."

"It can be."

"Well, I can live with that part of it."

He was quiet for a minute. Then: "When I get back, I'm going to take a vacation on the Moon. Shaira has been after me to do that for a long time."

Shaira was his girlfriend. "Might as well. You get free transportation."

He frowned. Read something in her tone. "You don't think it's a good idea?"

"You been there recently?"

"Last year, Hutch. The place is perfect. We'll stay at the Liberty. Hang around the pool. Take the tour up to Copernicus and stroll around the rim like you did." He shook his head. "That's more sightseeing than I get sitting in here."

Hutch's eyes closed momentarily.

"What's wrong, Hutch?"

"Nothing, really."

"Something's bothering you."

She took a deep breath while she considered how to say what was on her mind. "They're ruining the place, Jake."

"In what way?"

"Well, I'm probably going overboard on this. But, hotels. Pipelines. All kinds of construction projects. Copernicus is more than eight hundred million years old. Recent by lunar standards."

"What's your point?"

"You go there now and they have hot dog stands. There's a lift to take you out over the crater. They have a souvenir shop. Jake, you don't *feel* the age of the place any more. It's like going to Atlantic City, except there's no ocean. And you don't weigh as much."

He looked at her sympathetically. Smiled. "Well," he said, "everybody to his own."

"Hutch." Benny's voice was subdued. Unusual for him.

"Yes, Benny?"

"We're getting a picture from the smaller moon."

"Okay."

"Take a look, please."

The planetary image on the navigation screen blinked off and was replaced by a rockscape. Something that looked like a giant flower stood in the middle of the image. Long petals rose in all directions. Hutch increased the magnification. "Jake," she said.

"I see it."

"What is it?"

"Don't know."

She opened a channel to the ground station. "Ollie, you still there?"

"Affirmative, Hutch. What do you need?"

"Have you guys been working on the smaller moon?"

"On Lyla? Negative. I'm sure we haven't been anywhere near it. Why do you ask?"

She was about to explain, but Jake shook his head and drew his finger across his throat. Break the connection. "Just curious," she said. "Thanks. *Copperhead* out." Then she turned to Jake: "What's the matter?"

"Let's get a better look so we know what we have before we start talking about it."

She went to maximum magnification. It was *not* a flowering plant. "You know what I think it is?" she said.

He nodded. "A monument." She squeezed her eyes shut and wanted to scream. But Jake held a hand up, cautioning her. "Relax," he said.

"I don't believe it, Jake." She opened the allcom.

He shook his head and turned it off. "What are you doing, Hutch?"

"I was going to let our passengers know."

"Not a good idea."

"Why not?"

"If that really *is* a monument, and they become aware that it's down there, who do you think will get the credit for the discovery? Us? Or the Professor?"

Hutch thought about it. She might not have been that anxious to get the score for herself, but she didn't much like Eddington. "What are you suggesting?"

"We look at it on the way out. Meantime, say nothing. And we make sure it stays off our passengers' screen."

It's difficult to judge the size of a world when you can only look at it through images on a display. The *Copperhead*'s ports, including the bridge wraparound, were completely covered, sealed against radiation.

Hibachi's World was named for the biologist who'd predicted life could be found in such a place. It was moderately smaller than Earth, with gravity at 84 percent standard. It had jungles or forests or something, but they were like nothing anyone had seen before. They resembled a vast tangle of hair that was purple in some places, blue in others, and gold in still others. It covered the half-dozen continents and the various islands. In some areas it stood stiff rather like a crew cut. In most places, however, it was simply a colorful limp confusion. These were not pieces of vegetation competing for

sunlight. Rather, as Larry had explained to her, they were hiding from the periodic flares and they were also sucking energy from each other and, occasionally, from unwary animals. It was not a place where you wanted to go for a walk in the woods. Much of the water had an overlay of matting, turning substantial areas into sinkholes.

The larger of the two moons occupied the inner orbit. It was retreating gradually, but its pace was slowing. In time it would pause and begin to fall back toward the surface. Eventually it would come down. But that was millions of years away.

The other satellite was Lyla. It was only a few hundred miles across, and it sailed through the night in an erratic orbit that took it out almost a million miles.

Normally, the AI would make the orbital approach. "But," said Jake, "your AI is down, Hutch. You'll have to do it manually." Later in the mission, she'd undoubtedly have to exercise control over the *Copperhead* after her engines blew out, or operating from the auxiliary control room aft when power on the bridge had failed. She'd be required to deal with a series of emergencies, probably including a runaway AI that refused to allow a shutdown. But this was the first stop. Just show that she could handle the *Copperhead*. Compute the gravity index and get the approach velocity right. Don't go skipping off into space; don't bounce around in the atmosphere.

Hutch had done this any number of times in simulation. And she'd brought training vehicles smoothly into Earth orbit. No problem at all. Just pay attention. Here, of course, the gravity was a bit different. And that changed the game slightly. But all she needed to do was follow her instincts. And she knew she'd have had no problem had Jake not been sitting there watching her every move.

"It's okay," he told her. "You're doing fine."

Maybe it would have been better had he said nothing. As it happened, she came in at a slightly higher velocity than the situation called for. A more experienced pilot would have eased back, just touched the braking thrusters, and slipped into orbit. But Hutch overreacted, braking too hard. She heard a couple of surprised cries in the passenger cabin.

"Damn," she said.

"You're all right. Just back off a bit." She was well above the atmosphere. Taking no chances with that.

She came off the thrusters altogether, then had to apply them again. Only slightly, and had she spent more time on the bridge she'd have thought nothing of it. But at the moment the maneuver seemed horribly clumsy.

"Orbit established," said Benny.

She exhaled. "Okay, everybody, you can get out of your restraints now."

The shuttle was packed with supplies and replacement parts. It was currently about twenty minutes before sunrise at the ground station.

She contacted the complex, and heard a woman's voice this time. "Acharius," Hutch said, "this is *Copperhead*. We're on schedule."

"We'll be waiting, *Copperhead*."

She and Jake got up and wandered back into the passenger cabin to make sure the passengers were ready to go. Jake glanced at her, and she understood. She would continue to function as captain.

"We'll be leaving in a few minutes," she said. "The ride down to Acharius will take about three-quarters of an hour. Make sure you have everything you need. This would be a good time to check your compartment." She smiled. "It was a pleasure to have you along. I hope you enjoyed the flight."

Larry and Isaika took a last look around to be sure they had everything. The professor remained placidly in his seat, his restraints still holding him in place. Then, finally, it was time to go.

Hutch led the way down to the launch bay, which also served as the cargo area. Like the ship, the shuttle was heavily armored. The pilot would not be able to see directly outside, and would be dependent on a display screen. "Best," said Jake, "is to let the AI take us down."

She had no problem with that.

They stowed the luggage in the cargo bin, and she opened the hatch. Interior lights came on. Everybody climbed in. "Snug," said Eddington.

Hutch, without lifting her eyes from the gauges, nodded. "The sacrifices we make for science," she said quietly.

Jake elbowed her gently. No smart remarks.

Eddington didn't reply.

"We've started decompressing the launch bay," she said. "We'll be leaving in about three minutes."

"How can you see to fly this thing?" asked Larry. "It's like sitting in a box."

The Acharius Complex was, for the most part, underground, buried beneath a lead shield. The shield, of course, had long since been covered by windblown dirt and vegetation. Four small modular blockhouses were visible. They served primarily as entrances. Two shuttles were on the ground.

As they descended, someone came out of one of the blockhouses and waved. Eddington, who also had access to a display, said, "That should be Abel."

There were nineteen people in the complex. Theodore Abel, Hutch knew, was the director. She didn't know what he looked like, however, and in any case the figure seemed too far away to identify. But she knew Eddington pretty well, even though the flight had been a short one. He'd have expected to be met by the head guy.

She magnified the image, and heard Larry confirm that it was indeed the director.

Pilots generally claim they like a zero-ggee environment. It's common wisdom that anyone who prefers the tug of gravity isn't meant to operate a superluminal. It makes sense, but Hutch didn't know whether there was any truth to it. Nevertheless she played it safe, always pretending to feel perfectly at ease floating around in the *Copperhead*, but the reality was she would rather have walked. Two feet on the ground is good. There'd been reports for years that physicists were close to creating a mechanism that would generate an artificial gravity field. She hoped it would happen during her lifetime.

In any case, it was a relief to stand in the shuttle checking everyone's oxygen mask, and then, last in line, to climb down onto solid ground.

By then another guy had joined Abel. He was eye-level with Hutch, who was not especially tall. But he had a big smile and she guessed, correctly, he was Ollie. They all shook hands and Abel took them through the airlock. "It's good to see you," he said, removing his mask. "How long will you be staying?" The question was directed at Jake, who passed it to Hutch.

"We have a series of missions, Dr. Abel," she said. "Have to pull out today."

"I'm sorry to hear it. Anyhow, my name's Ted. We'd hoped you'd be able to spend some time with us." He was tall, younger than his pictures had suggested. He had black hair, dark skin, dark eyes, and the easy manner of a guy who usually got his way. "Why don't you let us serve you some breakfast before we start unloading?"

They left their gear in the blockhouse, descended a staircase, and started down a dimly lit corridor, past closed doors on both sides. "As you can see, Michael," he said, addressing Eddington, "we're still living the good life here."

Eddington reached out and touched the wall. "Yes," he said. "Enjoy it while you can. Seriously, Ted, you know the Academy is closing the operation down. I don't think they feel there's much more to be gained out here."

"That's what we heard. But I don't think it's going to happen."

Eddington slowed down. "Why not, Ted?"

Ollie glanced across at Hutch. She got the significance: This was the surprise he'd mentioned.

"Let's eat first. Then I have something to show you."

Hutch had pancakes and strawberries. She got introductions to everyone at the Complex, except the half-dozen who were out doing field work. Ollie sat down with her. She asked if he was a biologist.

He laughed. "I'm just the technical support. Something breaks down, I do the repairs."

"How do you like the job?"

"Never again," he said.

"Don't get out much?"

"That's part of it."

"What's the rest?" The strawberries were good. She wondered how they managed to produce them.

"It's—" He shrugged. "I don't know. I guess it's seeing the same people all the time. I don't think I realized what I was getting into. I mean, everybody's nice and all. But you like to see some new faces once in a while."

"How long have you been here, Ollie?"

"Three and a half years," he said. "I signed on for four."

"Why so long?"

"The pay's good."

"Any single women here?"

He didn't have to think about it. "A couple."

Okay. Nobody to get excited about. "So what's the surprise, Ollie?"

He looked down the table toward his boss. "I'd better let Ted break the news."

When they'd finished, Isaika took Ollie and a few others down to unload the shuttle, while Abel led Hutch, Jake, Eddington, and Larry into a conference room. The lights dimmed, a projector came on, and they were looking out across the vast purple matting that constituted so much of the surface of Hibachi's World. In the distance, it faded to ocean. "This," said Abel, "is a section of coastline about a thousand miles west of us. You'll notice the diminution in the coloring. That was what first drew our attention."

Hutch saw only a very slight difference in the color.

"You get something like that," Abel continued, directing his remarks primarily to Eddington, "and you know there's an abnormality."

Eddington nodded.

"A disease," said Larry.

"As a matter of fact, it was a parasite. But that's not the point. It's simply the reason we got interested. We sent a team out to look. And they found *this*—"

The image shifted. The foliage receded and grew swampy. A hilltop emerged. "There's a bay beneath all this," Abel said. "And the hilltop you're looking at is an island. Or would be if the cover were to disappear."

"So where are we going with this?" asked Eddington.

"Let's make some of the cover go away." It vanished, and they confronted a harbor opening into the ocean. And the island—

"My God," said Larry.

A round building, about eight feet in diameter, stood at the highest point on the island. It was an open-air structure, made of stone, its roof supported by five circular columns. Its base was raised a few feet above ground level, with steps providing access on opposite sides.

"You're saying," said Eddington, "it's been there all the time?"

"There's a *city* beneath the growth. But it's limited to the coastline. It's big, though. Probably supported a population of twenty, thirty thousand at one time."

"How long ago?" Eddington leaned forward, peering.

"A thousand years or more. We don't have the capability to make a determination."

"What else," asked Larry, "is on the island?"

"Nothing. The only thing we found was *that*." The round building.

Eddington shook his head. "I wouldn't have believed this world harbored a sentient life form."

Abel nodded. "Since then we've discovered two more cities. One smaller, and one capable of supporting probably a hundred thousand. They're both on this continent. Nothing anywhere else that we could find."

"What's the technology look like?" asked Larry.

"Rome, probably."

Eddington just sat there, breathing heavily.

Larry was visibly overwhelmed. "You have any idea what they look like? Are any of them still around?"

"If there are, we haven't seen any. And so far we don't know much about them. We're pretty sure they were taller than we are. But we haven't really had a chance to do any serious investigation."

Eddington cleared his throat. "Does the Academy know?"

"We haven't notified them yet, no."

"Probably just as well. You'll want to have a few more answers before you say anything. As soon as they learn about this, they'll send some specialists out. In the end, they'll take the mission from us, and we'll be closed down."

Larry was peering at the building. "What is it, Ted? You have any idea?"

"We think there was a table in it at one time. We found what was left of it." He shrugged. "Maybe it was a bait shop."

"It was probably an altar," said Hutch. Her tone drew a few glances.

Abel's features softened. "I was kidding," he said.

"What sort of condition are they in?" asked Eddington. "The cities?"

"They've been wrecked by the vegetation. It's thinner out on the water. Along the coastline, everything got strangled."

"Okay," he said. "I want to go take a look. As soon as you can arrange it." He was giving orders.

Abel frowned, but let it go. "If you're interested, Michael," he said, "we can take a look at some of it now."

"What do you mean?"

He got up. "Come with me." They followed him out of the conference room and down another long corridor until they arrived at a set of double doors. He pressed a pad, the doors opened, and lights came on.

It was a storage area. The walls were lined with shelves. Spare parts were stacked around the room. And some building materials. And—

—In a corner, pieces of stone. Hutch recognized them immediately, slices of the columns, the rounded roof cut in half, pieces of the steps—

It was the island building.

"Eventually, we'll take it home," said Abel. "We'll reassemble it and put it on the front lawn of the Tolliver Building." At the Academy.

"My thought exactly," said Eddington.

Lyla had been, apparently, someone's girlfriend. Forty-three hours after departing the Complex, Jake and Hutch rode the *Copperhead's* shuttle down to Lyla's surface.

It was one of the Great Monuments. It had been erected in the middle of a flat rocky plain. Protected from the void by e-suits, they stood in front of it, and looked up. It towered over them, long golden-red petals, soaring into the night. The design was similar to the others in the series, the style, the general sense of ethereal beauty defying a boundless, uncaring universe.

It was not, however, a depiction of a flowering plant, as Hutch had thought at first, but rather of solar flares, a tribute to the local sun. The flares, eight of them, lifted out of an engraved base and rose toward the unforgiving sky. They were of different sizes and textures. One was broken. Hutch looked up at it. No. Not broken. Unfinished.

Neither Groombridge nor Hibachi's World was in the sky. The monument was on the back side of Lyla, so the planet was *never* visible, since the satellite was in tidal lock. But the stars were bright, and the monument caught and reflected the illumination.

"It's magnificent, Jake." She'd never actually been in the presence of one before.

The base was engraved. Two lines of characters unlike anything she'd seen. The symbols that appeared on the Grand Monuments never matched each other. Theory held that each of the monuments came from a different era, the most recent ending at about 19,000 B.C. "I would have liked to have met them," she said. "The builders."

"You're a few thousand years late."

"I know."

"And you can't be sure they'd be friendly."

"Jake," she said, "there's no way I could be afraid of whoever put this here."

"Jake." Benny's voice. AIs were supposed to be detached. But he was so excited he'd forgotten that Hutch was theoretically in charge. "There's something else. Off to the left of the monument. Your left."

There was a stone marker. Oval-shaped. Engraved with the same type of characters that were on the base of the monument. Two lines.

Jake looked at the engraving, then walked back and looked at the one at the base of the monument. "Different messages," he said.

Hutch opened her channel to the AI. "Benny, scan the ground. Where we're standing."

"Scanning."

"You think something's buried here?"

"Someone."

"Jake." Benny again. "There's a box. With something inside. A skeleton. But not human. I would guess from its condition that it has been here a long time."

They climbed back into the shuttle and the AI forwarded the images. Details were difficult to make out. It was a biped. Hutch counted six digits on each limb. And she saw a cluster of thin bones underneath that didn't seem to fit. Wings, maybe? If so, it might be a match for the creature depicted on the Iapetus monument.

"I wonder what happened?" said Jake.

"Best guess?" she said.

"Go ahead."

"This one died while they were working. While they were putting this thing together. Maybe they got caught off guard by a flare. Maybe it simply fell off a ladder. No way to know. And it doesn't matter. But they decided to pay tribute to it."

"By burying it here?"

"That, too."

"What else?"

"They left the monument incomplete. Maybe for them it constituted the ultimate recognition."

"Okay," he said. "Makes sense to me." Big smile. "Hutch, I can't imagine a better

way for you to launch your career. Find one of these? They'll put our pictures on the Wall of Fame."

"I'll settle for my license," she said. "Benny, we have lots of pictures?"

"Yes, Hutch. I have a substantial record."

"I suggest," said Jake, "we call it in now. Let them know what we have. Before somebody else stumbles across it." He looked at Hutch. "What's wrong?"

"I think we should direct Benny to destroy the record."

"What?" Jake looked stunned. "Why?"

She hesitated. She was thinking how nice it would be to go back to a hero's welcome. To become famous.

"Hutch?"

"I think we should forget what we saw here. Just go away and leave it."

"Have you lost your mind?"

"After we call it in, they're going to come out here and dig everything up. They'll take the creature back to a lab and dissect it."

"Of course they will. Hutch, this is one of the Monument Makers."

"They'll desecrate the place."

"I didn't know you were religious."

"Religion has nothing to do with it. What do you think the builders would have thought about us ripping up the grave?"

"They're long gone, Hutch."

"No," she said. "They're still here."

"I'm not sure I know what we're talking about, Priscilla."

"I'm tired of it all," she said. "This time, Jake, we have some control over what's happening." She turned frustrated eyes on her captain. "I'm tired of hot dog stands on the Moon and beachfront homes on Quraqua and wrecked altars back *there*." She looked up at the sky but of course saw no sign of Hibachi's World. "If you'll consent, I'd like to let it go. Forget the monument. And hope that Eddington and Ted Abel and people like them don't notice what's here. Maybe by the time somebody else comes across this, we'll be a little smarter."

Jake let his disappointment show. "You're really serious, aren't you?"

"Yes, Jake." She saw the uncertainty in his eyes. "Please."

He touched the marker. Pressed his fingertips against the engraved symbols. "I wonder what it says?" O

Seeing Oneself

From "The Official Guide to Time Travel"

Whenever you approach your old self

A distraction leads you farther aside

When you try to focus upon your child-self
You find you are looking in the opposite direction

Mirrors are no solution to this twitch
Time just doesn't allow for much self-reflection

—Robert Frazier



THE WAR IS OVER AND EVERYONE WINS

Zachary Jernigan

The author tells us inspiration for his second *Asimov's* tale came from a quote attributed to Margaret Atwood, "I hope that people will finally come to realize that there is only one 'race'—the human race—and that we are all members of it," and E.M. Forster's comment, "Only connect." Zachary's story shares their sentiment that human beings are always better off building bridges than walls.

"We're burying your grandpa tomorrow," Dad tells me. Not, *Poppa died, son*. Or, *I'm sorry, Mike, but your grandpa passed away last night*. Nope. First thing when I answer the phone, *We're burying your grandpa tomorrow*.

"Was it easy for him?" I ask. "Was he asleep when it happened?"

Dad sighs. "No. He was up all night. At the end he asked for you."

That hurts. I can't think of anything to say to it. For a moment I imagine Grandpa, blood dried on the white stubble of his chin. Snot dried above his mouth. It feels pretty bad to see that right now, but when I try to imagine anything else I fail.

"Shit," I say. "I'm sorry, Pop."

It sounds like bullshit, far too little. Still, what can I say that won't sound trite?

Dad grunts. I listen and I suppose he listens on the other end. We listen together, maybe trying to think of more to say. Something heavy and unwieldy lies between us, about this and everything else.

"You have to come home, son," he finally says.

I nod, but he can't hear that.

It's August 3, 2039. 2:32 PM.

I wait five hours and then call work to tell them I won't be in tonight, pack a bag and step out the door. It's 7:59. The drive from Portland to Boston takes three hours. It used to take two, but that was before they cordoned off the city into districts. Little Bangkok. Little Ethiopia. Guatimalita. And more generally, the Black, Yellow, Brown, and Red Districts, surrounding and eating up the smaller neighborhoods, assimilating them into America.

I've got a hangover I can't shake and I haven't gone to see my family in eight months. Before that, it was about a year. Grandpa was sick then, too, but then again he's been sick since I was ten years old.

"He has too much white man in him," Dad explained to me. I was eleven or twelve.

"Do I have too much in me?" I asked. Some of the kids in school had started wearing dark foundation. Two years after the virus killed all the whites, it had become a fashion statement to be dark. Like having the right shoes or the newest quikfone.

Dad held my hand close to his face and squinted. He said, "You look Indian enough to me, son."

Of course, now I know the fear that underlay these concerns. Even if I don't understand it. My memory of white people isn't clear, but it is benign. Mostly, I remember how they smelled, lemony and astringent like a spray you use to clean your sink. Why this is, and if it's true, I can't say.

I pull into the driveway at 10:41. The lights are on all over the house. Shit. I was hoping everyone had gone to bed. Especially Mom, because she'll start crying all over again when I walk in the door, and not just about Grandpa.

"We don't see you enough," she tells me all the time. "You live so close, Mike."

My brother, he's in there already, all the way from Philadelphia. I can feel him. I bet he told his boss what had happened and within an hour had the kids packed up and on the road. Six hours, which means he's been here for an hour.

Last time I talked to him, about two months ago, he asked me, "Why's it so hard for you to love your family, Mike? Why's it always look like you swallowed something rotten the moment you walk in the door?"

It's not important what I said in response. We've had the conversation more than a few times. If he doesn't get it now, he won't ever.

I shut the car door softly because I don't want everyone rushing out. My mother, hands to her mouth, looking like she's about to collapse. Hugging me as if there's a chance I'll float away. My brother, clapping me on the shoulder. A brave smile for the two of us, taking care of things.

And Dad. Yeah, and Dad. Standing at the top of the steps, hands in his pockets, staring down at me, looking me over, reading something in my posture, the way I wear my clothes.

An expression on his face. As if he can't quite place me.

I knock on the door and everyone crowds around me in the foyer. After Mom's done soaking my shoulder and Ben's patted my back, Dad shakes my hand. I look him in the eye. He looks right back, but there's no warmth, no nothing.

"How was the drive?" he asks me.

"Fine," I say. "Like clockwork."

"How's the job?"

"Good. Can't complain."

And just like that, we're caught up.

We all shuffle inside. My niece and nephew are asleep on the couch. In the kitchen Mom pours four glasses of wine. The bottle is nearly empty, which tells me she and Dad have been at it. As if on cue, she tells me Vikram's coming over in a little while. My cousin. Which means his wife and their kids. The kids will wake up my niece and nephew, Vikram and my father will argue.

I won't be going to sleep for a while.

I grab a few aspirin out of the medicine drawer, sit down across from Dad and drink half my wine before anyone's said anything.

"Do you know what happened to Vikram?" Mom asks me.

How would I know, Mom? I almost say. Instead, I shake my head.

"Oh, Lord," she says. "Mitul, it was so awful. I don't even like talking about it." Dad grunts. Gets up for a beer.

Mom leans forward and grabs my wrist. "They broke his wrists," she tells me. "Vikram was only buying some fireworks for the fourth, and they almost killed him. They kicked him in the face, in the chest. He was in the hospital for seven hours, Mitul. He has scars on his face. All for buying fireworks."

"It wasn't that," Dad says. "He shouldn't have been there alone. They're crazy. Vikram's an idiot for being there in the first place."

"Who are *they*?" I ask.

Mom looks at me like I'm a fool. "Where do people buy fireworks, Mitul? He was in Chinatown. Harrison Avenue. You know we used to take you kids there when you were little." She shivers, then thrusts a hand at Ben.

"And Bhanu lives only three streets over from where it happened!"

Dutifully, Ben speaks up. "That's true, Mom." He turns to me. "It's true."

I look at him until he looks down at his fone again.

I decide we need another bottle of wine. As I stand, Dad walks out from behind the counter and sits down again.

"And now your grandpa's dead," he says.

I can't see him but I know the words are meant for me. I grab a bottle from atop the fridge and open it, keeping my head down. The four of us have fallen into the kind of silence that happens after someone says webe, fligger, 7-11, or buttonhead. Whoever breaks that kind of silence always ends up feeling exposed. Maybe even a little guilty.

"What does Grandpa dying have to do with Vikram?" I ask.

Dad shrugs. Ben sips his wine. Mom gets fidgety.

"It's just so sad," she says. "We should all get along."

I look at my watch. It's only 11:06.

Sometimes it seems like all we talk about is race. I suppose it's understandable. Drive through Portland and there are clear lines between your neighborhood and mine. In the larger cities there are walls. We all watch each other, waiting for somebody to make a move. We make excuses for violence. *Don't look at me like that, buttonhead.*

Was it anything like this before? Dad says it was worse, that the violence now is the last vestige of white influence still corrupting the system, but I've learned not to trust what he says when it comes to race.

Like the textbooks, Dad doesn't use the word genocide. Or racism.

I don't think the state of the world has anything to do with white people. We didn't erect walls because white men told us to. Just the same, we're not violent because there are no Caucasians around to keep things peaceful. No. We are what we are out of instinct to defend ourselves. *You could be next*, a collective voice warns. *You could be destroyed too, and become just a fading memory. A bunch of books written about your "culture," a few dioramas in a goddamn museum.*

We've become racial and cultural purists by default.

When I married a Vietnamese woman, Dad asked, "Don't you think that's just a little too close, Mike? Maybe you should rethink things." Later he said, "I'm not comfortable with her coming around here, her and her parents. No, I don't want to know them. Their eyes are barely slanted. They're too light. One of them starts coughing, I go for the shotgun."

I don't remember what I said to him. Justin was just eight months old. Even then I wanted to shield him from such language. His eyes weren't slanted either. He looked like me, only lighter. I wonder what difference it would have made to Dad if my son were half white, and smelled of lemon cleaner.

So I stopped coming around the house. I kept my wife and kid from Dad. Sometimes Mom came by, sometimes other relatives, but I could tell Linh made them uncomfortable. Justin made them even more uncomfortable. They held him slightly out from their bodies, as if they couldn't handle being too close.

Sometimes I wonder if they were secretly grateful he died along with my wife. Terrible thing to think of your family, but the human mind's not always pretty. Dad, at least, could be read easily. Linh and Justin's deaths did not so much make him happy as validate his view of the world.

"I fought for you, son. I fought to keep things like this from happening anymore."

That's what Dad said to me at the funeral, January 15, 2032.

I thought it was in extremely bad taste.

"My wife and child were killed by people like you," I told him. Though my voice was calm, I hit him hard enough to knock three teeth out of his head. He had to be taken to the hospital. Ambulance drove right into the cemetery.

He never apologized. Neither did I.

At 11:42, Vikram and Eta walk through the door. The kids follow, color and noise, new clothes, squeaky shoes with white rubber soles. They're not attractive, Yuvati, Wali, and Dinar. They're fat and spoiled-looking. They look like miniature Vikrams.

"Hello, Mike," Vikram's wife says to me. A chubby hand on my upper arm, warmth I can feel through my shirtsleeve.

"Hello, Eta," I say. "Hello, cousin. Want some wine?"

She nods. Vikram wrinkles his nose. He doesn't hug me or offer his hand to shake. The Chinatown beating must have been a while ago, or not nearly as bad as Mom said it was. He's got no scars on his face, no wrist brace.

"How's the job?" he asks.

"Fine," I say.

I know what he thinks of my job working security at the Clinton. I know he'll never forgive me for turning down his offer of an interview. "I can offer you something with a future," he said. It was probably true, but working for him would be almost as bad as working at the shop with Dad. A foot on the small of my back all day.

I pour Eta a glass. Frowning, Vikram stares at it in her hand.

"How was the drive?" he asks.

I pour myself a glass. "Not too good, Vick. Grandpa's dead."

His eyes widen. He rocks back on his heels. "Of course, Mike. I didn't mean to imply anything. Of course the ride was awful. You had that on your mind." Awkwardly, he puts a hand on my shoulder. "But we're here for each other. It's times like these that you really appreciate what you have. Family. We have to remember the blessings. Grandpa's suffering is over. It's been hard on all of us, but thank God it's finally over."

Vikram turned seventeen on the day the video announcing the virus leaked onto the internet. December 11, 2017. He remembers when the white kids started coughing in class. Calling in sick. Most of them didn't come back after Christmas break, and those who did quickly realized it wasn't a good idea.

"My best friend was white," Vikram tells anyone who will listen. "Two of my classmates were beaten to death in the gym bathroom. Everybody was afraid of getting the virus, even me. Some of the kids, I swear to God I didn't even think they were white! But we got through it, all of us together."

Vikram wears these experiences like badges. Or wounds. He talks like someone who survived a war. Who the hell knows what side he thinks he was on.

Ben was only eight when it happened. Back then everyone called him Bhanu, not

just Mom. I don't know what he remembers of the virus. He won't talk about it. His expression hardens, his ears close up. He interrupts the conversation as if it hasn't been happening.

He pretends the world is the way it's always been. For my niece and nephew, there's no question this is the way the world is. The white people are all underground or carried away on the wind.

But that doesn't mean they're gone. We breathe them in. They're in everything we eat. We burned their corpses and their ashes blanketed the whole Earth.

"Why do you have to dwell on these things?" Mom asks me every time I start talking about the virus. "Why can't you leave it alone?"

She's never implied she approves of Dad's support, his vote, but this is incidental.

"You really think he did the right thing, Mom?" I ask. "If he's a hero, why isn't there a memorial? We could have a shrine. With his favorite quotes."

"Mitul," Mom says, and looks away.

She changes the subject to something sunnier. She's like Ben in a lot of ways. She accepts that the world is what it is.

Dad quotes Malcolm X, Oscar Zeta Acosta, and Allen Pan, though I don't think he understands what they're talking about. Arguing with him is like arguing with a religious fanatic. You have no chance of winning the argument. If he has any doubts, they were buried too far down for anybody to touch.

"I'll tell you something," he told me long before I fell in love with a lemonhead and lost his respect. "I'd do it exactly the same a second time. I'd send money where it needed to go. And if the plan hadn't worked I'd have taken up arms. The world is cleaner now, less complicated. You can see that, Mike, can't you?"

Years later, the night before Linh gave birth, Dad and I sat at the kitchen table. It was late and we were both a little drunk, arguing the same old argument in soft tones so we wouldn't wake anyone.

Then I said something that shut him up. Something I'd wanted to say for a long time. Something obvious that no one had the guts to say. Or maybe it wasn't guts but convenience. No one wanted to get him riled up.

I didn't care anymore.

I said, "Your grandma was a white woman, Dad, which means the family's only one generation removed. How does it make you feel to be responsible for her death and Grandpa's sickness?"

It felt good, but I'm glad my mother wasn't there to hear me say it.

Dad chewed the inside of his cheek. Then he reached across the table and slapped me.

"You don't understand shit, son."

The next time I spoke to him was to tell him my wife and child had been killed. Someone blew himself to hell at the intersection of Congress and Oak, taking seventeen souls with him. Witnesses said he came out of a Turkish café. No one saw what he looked like. They couldn't say whether he was Indian, African, Asian, Middle Eastern, or Native.

My wife and child's killer has no identity. The onlookers bleached him of that, and so I'm left feeling unsure. But that isn't the word. I'm left feeling *unfinished*, or maybe *undone* . . .

What am I left feeling?

12:57. Vikram and all four kids are leaned together on the couch, asleep. Ben's asleep in the overstuffed armchair, fone lighting up every couple of minutes with a text. Eta has a bad back. She retired to the guest room after two glasses of wine and 10 mg of Vicodin.

Mom and Dad are in the kitchen. Not talking, but I can tell they're awake. Some awareness from childhood.

As if he's sensed me thinking about him, Dad comes out. A brief view of the kitchen table, Mom pouring herself tea. I guess she's not going to sleep at all. It must be worse for her now. Dad's always punished her for being pure Khatri. No one in her family got sick. Her mother's still alive, so healthy she almost glows. Of course, Grandpa's dead now. There's no more reminder of the white in us all, but it'll be a while before that sinks in.

"I'm going to bed," he says. "You can sleep there, right? It's not too cold?"

The air conditioner's blasting. It always is. The older Mom and Dad get, the colder the house becomes.

"No, it's fine," I say. "I'll grab a blanket if I need one."

He nods. Pauses, staring over my head. Clears his throat. "Much as I hate to say it, Vikram's right, Mike."

"About what?" I ask. I know what he's talking about. Vikram repeated it enough. He latched onto the speech he gave me and repeated it ad nauseum. He and Ben nearly drove me crazy with their affected air of mature reflection. Fuckers sat at the kitchen table and lectured on the importance of perspective. *Let's not be sad. Let's celebrate Grandpa's life.*

Dad's eyes meet mine briefly. He looks wary.

"Blessings, son," he says. "Grandpa's suffering is over, and that's something to be happy about."

I barely resist laughing. I've been sitting here getting drunker and madder, waiting for an opportunity to fire off about Vikram's bullshit, but Vikram didn't give me one.

So much the better that Dad has.

When I speak, I speak carefully. "Really, Dad? I admire your attempt to make something good out of a bad situation. A situation, I might add, people like you are responsible for in the first place. So yes, by all means let's celebrate. Otherwise we'd have to take a long look at our decisions. Right, Pop? Isn't it wonderful that Grandpa's dead and we don't have to be constantly reminded anymore?"

He doesn't move. For half a minute nothing moves. My thoughts float on a sea of alcohol, muddled again after my organized outburst.

"Fuck you, Dad," I finally say. "Go to sleep and leave me the fuck alone."

Without a word, he turns and ascends the stairs. An uncharacteristically muted reaction that leaves me vaguely unsatisfied.

The flatpad's still on, muted. A Bengali newscast, confusingly frenetic. I stare at it for a moment, focusing briefly on each of the ten different stories playing simultaneously. I linger on the last one too long and it balloons on the screen. A reporter stands on a street, yelling into his microphone. Palm trees behind him, bent nearly sideways. The man, bent also, leans backwards against the hurricane wind.

A commercial comes on, tells me the station is *ALL INDIA, ALL DAY!*

I've had nearly two bottles of wine and I'm not tired at all. Instead, it feels like my entire body has a case of restless leg. Like there's an itch inside my bones.

I have to get out of the house.

Halfway down the block I think I hear someone calling my name. I keep walking. Mom, probably. I should have said something before I left, but I know I would have let her convince me not to go.

She thinks the whole world is dangerous, but I'm in Little Calcutta. Indians own everything from Massachusetts Avenue to Charles Street, Boylston Street to the Charles itself. As long as I stay in its confines, I'm safe. It's already quiet in our neighborhood, though it's only 1:10 in the morning.

I take a right on Beacon. The wall between Little Calcutta and Mexicoville is difficult to make out in this light. A band of black, cutting off the street.

I pass Cheers, which was appropriated by the Indian community soon after the walls were erected. I went inside once. The décor had been changed to Bengali kitsch, and five or six flatpads played episodes of the old show continually, purposefully dubbed incorrectly into Hindi. It amused me for a moment and then became depressing.

Sometimes I watch old sitcoms after the cleaning crew leaves the Clinton. I drag the comfortable office chair from the information desk into *Display Room B, European American Television, 1927-2017. Mary Tyler Moore, Cheers, The Honeymooners*. In the twelve years I've done security for the museum, I've seen more classic television than most professors of European American studies.

After all that television, I've become somewhat sentimental about white culture. A familiar construction, a myth all Americans have inherited.

I'm almost to the wall. Sensors notice my proximity and a section lights up, illuminating the columned black surface. Closer, the sliding doors light up in red, revealing a warning.

CAUTION, LEAVING LITTLE CALCUTTA.
ENTERING AREA 59 MEXICOVILLE.

I've never walked into Mexicoville before. I've driven under it and ridden the maglev above it. It looked like everywhere else, no more alien than Portland or Hartford. Homes and businesses, kids riding bikes and skateboards. From above you can't tell the difference between Indian and Mexican.

Appearance tells you nothing.

For a short while in his late teens, Ben dated a Mexican girl. A bicycle courier two years older than him. Mom says no one suspected anything. She was quiet. She looked Indian. Ben said she was visiting family. When her brothers found out, they and a group of friends entered Little Calcutta, looking for Ben. The name was all they had.

They left with busted teeth and a few broken bones, robbed of their valuables.

"Normal kid shit," Dad said.

The wall looms above me. I reach into my pocket for my I.D. A simple action, walking forward with it for the sensors to read. My feet feel light, like they can carry me through the doorway.

Into dark, deserted streets that look just like Little Calcutta's.

Before I know I've made the decision, I turn and start walking home.

Dad never killed anyone. He didn't release the virus into D.C.'s water supply. Grandpa, a better man, the person I most admired in the world, hadn't seen the value in these distinctions. You could see it in his face. He looked through Dad like he wasn't even there.

Grandpa never spoke about the virus and never bitched about his pain. He never spoke about race. He listened to me argue with Dad and I couldn't tell if he approved. The arguments got worse and worse as the years passed until I finally moved away in 2027. Put a state between Dad and me. Ran away.

I couldn't control myself around him anymore. Anything he said triggered an argument, and I felt inadequate, arguing the case of a people I never really knew. I still feel that way. Dad has justifications and I have anger. It gets the best of me and he comes away seeming like the victor.

But I have to constantly remind myself of one thing. If I thought for a moment it

wasn't personal, that my primary interest was social justice, then I'd be a fool. I'd be just like Dad. Give me twenty years and I'd be a pillar of a walled community. I'd forget that everything is personal, and confuse myself trying to reconcile my beliefs with my anger.

I'd have my party lines well rehearsed. Just like Dad.

You have to ask yourself. How did the most diverse country in the world stay a white nation? How was that maintained? We elected a black man, and nothing changed. You know why? Because he was a puppet, a figurehead. The white men said, "You can't accuse us of racism anymore. We elected a black man."

And then the blacks themselves. They were a problem all on their own. Unlike Indians, they started to believe the lies. They watched too much TV. They saw rappers and singers and basketball players becoming successful. "I can too," they told themselves.

No, they couldn't. They were blind to the problem.

It wasn't surprising that the attack didn't come from them. The world needed people who could make the tough decisions. People who weren't afraid to crack a few eggs. Those who say the measures were too severe are fools. White people wouldn't change. It wasn't in their nature to give up the power they'd stolen.

What we did was right.

There are casualties in every war.

It's not just the man's race. I don't know anything about my wife and son's killer. I don't know his religion, political stance, or sexual orientation. The killer, like those who released the virus, never named himself. He could have left a note in the café or posted something on googleface.

I want someone to do it, admit responsibility. The killer must have had friends, family, lovers. People who encouraged him to do what he did. Any one of them would do.

Go ahead, say, "I did this. It was me. I changed the world for the better."

Maybe this person won't speak up because he knows the mechanics of fear. He wants the world to be crippled. A faceless enemy is always more terrifying. It could be your neighbor. It could be a member of your family.

Or maybe he doesn't say it because he knows he's wrong. No one act changes the course of history. Without my wife and son the world goes on. Without white men the world goes on. It repeats. It resets a little skewed, but eventually it rights itself back into its worn track.

Geologically, a lifetime is no time at all. Nuclear bombs, genocide, they only affect a few generations at most. Even extinction is a minor setback on the grand scale.

These facts are little consolation to me, and no consolation to Grandpa.

A lifetime feels like a long time. One act can have lasting consequences.

Maybe the killer's allies realized this after the killer acted.

Sometimes I imagine they feel regret and now live spreading the word of peace. Other times I imagine them strung up before representatives of every race, religion, and creed.

MOVING?

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"Look at what you've forced us to become!" the representatives cry. "You've set the clock back!"

And then I hear Dad's voice. He calls the unnamed men and women of The Revolution heroes. He describes their bodies as if they are gods. Sinew and bone and steel, Vishnu and Durga and Agni. And like the gods, the heroes have pushed mankind into a brighter future. The world can now be as it was meant to be. Not peaceful, no. Peace is a façade, but honor and dignity are not.

"We're finally free to be our own people," Dad says.

"But we were forced," I say. "It wasn't our decision!"

"Yes," he says. His voice is like a knife on a sharpening stone. "It wasn't your decision."

Dad finds me in the backyard. It's 2:13 and the walking has sobered me up.

"I thought you went to sleep," I say.

"Did you really mean what you said?" he asks me.

"What did I say, Dad?"

"You said I was happy to have Grandpa gone."

I think about it. "Yeah, I meant it."

Gravel crunches under his feet. I can't see his face in the darkness. When he speaks again, his voice is rough. There's cautiousness in his speech. I've never heard it before.

"I hated it. Having him here, I mean. He didn't understand. He never understood what I've sacrificed. He never even tried, son."

"Yeah," I say. "What you sacrificed. You mean a grandmother? Work associates?"

A breath hisses out of him. "Shit, Mike. Why do you always have to say things like that? You think it was easy for anybody? We killed millions of people. You don't do that lightly. Still." His voice catches. "Still, it was necessary."

"Must break a few eggs, right, Pop?"

He shakes his head. "You don't understand."

Something inside me suddenly feels loose. It flutters in my lungs when I breathe, like an engine part ratcheting against metal. The words I want come out, but they don't sound at all right. My voice grows quieter, gentler, as if I actually don't want to say what I say.

"You're right, Dad. I don't. But what I really don't understand is how you can stand before me, trying to justify twenty years of misery. Why didn't you just kill Grandpa and be done with it?"

He doesn't say anything. We stand for the better part of a minute, staring at each other across an unnavigable distance. Then he starts to walk toward the house.

"Wait," I call. "Dad. Wait."

He turns back.

"Do you even understand what we've lost?" I ask.

"Yes," he says. "Do you?"

This is a thing I have to consider. My wife. I lost my wife. My son. I lost my son. I moved away from family and friends. I work in a building dedicated to loss. Who knows more about it than me? I breathe in and out, and the flutter inside me increases. It becomes painful, and I realize something needs to be fixed between Dad and me. If whatever it is that's broken isn't mended, we'll never work right again.

Do I understand what I've lost?

I almost say no. I almost do the right thing and tell him the truth.

Instead, I say yes. ○

C.W. Johnson's fiction has appeared in *Realms of Fantasy*, *Analog*, and other venues. He is a professor of physics at a large university in California. The author teaches quantum mechanics and uses it in his research into nuclear physics and nuclear astrophysics, as well as in the writing of poignant science fiction stories like . . .

THE BURST

C. W. Johnson

Later, Cayla would think of it as The Lump, but that discovery still awaited her. Coming home, her brain was humming with thoughts of her data, her other discovery.

It was two in the morning. Cayla undressed quietly in the dark, then sat down on the bed and stroked the shadowed mound of bedclothes. After a while Rish stirred. "Everything okay?" he murmured.

"Yes," Cayla said. "Wonderful."

Into his pillow Rish said, "And . . . ?"

"I found another event, another burst. From 2017."

"Mmm. This the stuff you haven't shown to him?"

"I don't know if—" she hesitated. "I have data in several bands, but soft x-rays are missing." She slid into bed. "But this one, this one was *definitely* within our galaxy, smack in front of a dust lane so I could nail down the luminosity. Though I should see what Maune thinks first," she added, talking more to herself than to Rish. She sighed. "And of course he'll find a stupid flaw in my analysis. . . ." She frowned.

"You sound excited," said Rish, his voice now fully awake.

"Oh, I'm sorry, I woke you up," said Cayla, although she was and was not.

"S' okay. So these . . . bursts are still a mystery?"

"I think, or I hope," she whispered, snuggling closer, "it could be something totally, completely new." If only she knew what it was.

Rish yawned. "Of course Maune will ride off with the credit and the Nobel Prize. Like that student who discovered neutron stars."

"Maune's not like that. He's tough, but fair."

"Frankly, the way you describe Maune, he sounds like a cold fish."

It was as if Rish touched a wire to her fear. She pushed away the darkness clenching her stomach, ran her hands over Rish's smooth, lean body, pressed her breasts against him.

"Frisky tonight?" said Rish softly.

"I'm wide awake," Cayla whispered in his ear. "I don't think I could sleep right now. Not without something to relax me."

Rish turned on his side and kissed her. Their hands wandered down dark lanes and over each other's body, twisting under the sheets, pressing closer.

And that was when Cayla discovered The Lump.

"Uh, there's something—"

"What?" asked Rish, distracted.

"There's a bump or a lump on . . ." She paused. They had been sexually intimate for eight months now, but still the words stuck in her mouth. She opted for the clinical. "On your testicles. On the right testicle."

"Huh? There's nothing, I'm sure, let me, look, uh, feel . . ."

"I mean, maybe it's supposed to be like that or something, but I've felt, well, I've felt your—"

"That's new, I think," Rish said in a hollow voice. "Oh God. I don't think that's right." And he reached over Cayla to turn on the light.

Cayla Kalinauskas had grown up under thick Louisiana skies. One June midnight her stepfather herded the family into the car and headed down a country road. When they coasted to a stop, the cicadas were sawing noisy songs. Up among a watery swarm of stars they saw the comet, a pale thumbprint smudged across the night sky. Cayla felt a pinch to her heart, as if a fishhook had lodged there, and ever after the cosmos tugged her upward.

After making top of her class at LSU, she headed west to UC San Diego for graduate school. She had been warned of the fierce competition in Ph.D programs, and so was surprised when, after her second quarter, she was invited to join Olivia Huerta's astrophysics theory seminar.

"Beginning theory," Huerta emphasized the first day. She was short and squat, with thick black glasses that looked as if they had been drawn on in crayon. "And, for most of you, *ending* theory as well. It's unlikely any of you will be the next Hubble, Zwicky, or Hoyle. Many years have taught me this."

Students were assigned papers to explicate. Huerta coiled in silence, tilted her head like an owl watching a mouse, then pounced on mistakes. After a week the first student dropped out, crying. Others followed.

At the end of the quarter the five stubborn enough to remain were allowed to choose a final paper.

Cayla was up late working on her presentation when her phone chirped in her purse. Her maternal grandmother had passed away. Cayla sent a hurried v-mail to her professors and rushed back to Louisiana. The fierce June heat wrapped its sweaty arms around her, making her both homesick and longing to return to California.

A week later she was knocking on Huerta's office door.

"Amazing how grandmothers die when a project is due," Huerta said from behind teetering stacks of papers.

Cayla reddened. "I'm sorry," she said, unsure why she should be. "I had to go."

Huerta took off her thick glasses and rubbed at her eyes. "No. You had a choice." She put her glasses back on; her eyes, hugely magnified, blinked at Cayla. "Listen carefully. It's not your grandmother. If you want a nine-to-six job, weekends off, you can succeed as a teacher or an engineer. Not science. Jobs are too scarce, competition too cutthroat. Science doesn't care about grandmothers." When Cayla started to protest Huerta cut her off. "I have two days before I turn in grades. Give me your presentation."

"Now?"

Huerta nodded.

Cayla slowly walked to the e-board and picked up a stylus. She had chosen a paper on the appeal of its boldness. For a hundred years physicists had argued over how to interpret the mathematics of quantum mechanics: the magical collapse of wavefunctions in the Copenhagen interpretation, the jittery smearing of phases in decoherence, the handshake in the transactional interpretation, and so on. This paper suggested killing two persistent problems with one theoretical stone. It championed Everett and Wheeler's many-worlds interpretation of quantum mechanics as real,

and suggested that cosmological dark energy, the mysterious pressure that accelerates the flight of distant galaxies, is caused by the crowding of new universes as they split off into alternate realities.

She had hardly gotten off two sentences when Huerta interrupted. "This isn't science," she said. "It's philosophy. The observer doesn't cause the wavefunction to change—"

"I know," Cayla interrupted. "But the numbers, the rate of random quantum events matches the rate of creating new universes, which matches the pressure from dark energy."

"The evidence is nil."

"All you need is a slight nonlinearity in the Schrödinger equation...."

Huerta sighed, threw her glasses on the desk, and buried her head in her hands. When she emerged at last she said slowly, "Cayla, you are not dumb. You are quick and you pay careful attention to details. Excellent qualities. But that alone is not enough...." She sighed. "I looked up your asteroid papers, from your undergraduate days. If you enjoy that kind of science, are willing to work hard, and don't dawdle, you could make a competent observer."

She drummed her fingers on the desk. "And as it turns out, Howel Maune mentioned the other day he's looking for a student. He hasn't had one for a few years, but he's willing to try you out."

Cayla's guts suddenly found themselves on a rollercoaster of emotions. J. Howel Maune had mapped out the extreme low-mass end of the initial mass function, observed double-star formation, and proved the existence of strange quark stars. Cayla remembered now Maune was at UCSD, but hadn't seen him listed for courses or at colloquia. To her, he had remained just a famous name in her textbooks. To work with Maune...

Huerta scribbled on a piece of paper. "Here's his e-address. He's old-fashioned, doesn't do v-mail. Only comes in Wednesday mornings. Mostly he works at home." She paused before handing the scrap to Cayla. "Try to not make me regret this."

Cayla and Rish spent the stretched hours of the early morning scanning the v-net for information on lumps, although beyond vague descriptions and bland admonitions to *Check with a physician if you have a concern* they found little help. The earliest appointment Rish could make online was two weeks in the future. At five in the morning they found a phone number, but: "Hours are eight A.M. to four P.M."

They lay on the bed in the dark, Cayla watching the digits on the alarm clock slowly shuffle through the hours.

Finally, a few minutes before eight, Rish got on the phone. Cayla made tea, and brought it in as Rish was dialing. He listened, then slammed down the phone. "Busy."

Finally he got through, although it took some cajoling to get an appointment. "I know it doesn't sound like an emergency to you," Rish said. "But I'm feeling a bit anxious about this, don't you see?" He listened, then shouted, "No, I do *not* think I am a danger to myself! Can you *please* make me an appointment before I die of old age?"

When Rish hung up he said, with rain in his voice, "The best they could do was next Monday."

Neither ate breakfast. Rish made chai and said casually, "You're usually off by now, saving the universe one star at a time."

Cayla shook her head, but she was thinking, *Wednesday, nine-thirty, Maune will be in by now. I'll just check my v-mail or something.*

Rish shrugged. "It's not like we can do anything until next Monday. But if you don't think you can focus—I know I can't stand to think about the Tang dynasty right now—surely Maune will understand."

Cayla stared down into her chai. If science didn't care about grandmothers, what was its opinion on boyfriends? When once, in an unguarded moment, she had commented she could never be smart enough to catch up, Maune had airily replied, "It isn't about being brilliant, Miss Kalinauskas. It's just hard work." The only thing he took time off for was to walk his dog twice a day.

"I don't know," she murmured, an unseen hand clutching her stomach. "I don't know what he would understand."

When Cayla first met Maune, she thought he was ill. Later she learned he often worked all night, analyzing data, writing review papers, churning out pages of calculations. But when she first saw him ghosting down the hall, he looked like a driftwood branch carried downstream.

"Right," he said as they seated themselves in his office. "Miss Kalinauskas, Professor Huerta speaks highly of you," a statement that startled Cayla so much she missed the rest of his words. She suddenly felt stiff and awkward in Maune's office, which smelled of old paper and coffee.

He told her, "I have a large backlog of data on the Large Magellenic Cloud," which she explained to Rish, much later, is one of a pair of dwarf galaxies orbiting the Milky Way. "Since I've already looked for the things we *know* to look for," Maune continued, in a voice so quiet that Cayla had to resist the urge to reach over and turn up the volume knob, "we have to be imaginative and look for things we *don't* know to look for. We can guess. Or we can look for something everyone expects, something so boring no one has bothered to do it yet. I find the latter good for students. And on occasion," and here he bobbed his head, "something doesn't add up and we find something new."

So he wanted her to look at shock fronts in star forming regions. The space between the stars is not a pure vacuum, and supernova explosions drive hot gas into cold dense molecular clouds, triggering star formation and subsequent starbursts. The Large Magellenic Cloud offered a clear view. "Of course, we don't understand this nearly as well as we think we ought to. It's turbulence, and even now we still struggle with nonlinear problems."

Maune gave Cayla access privileges to his archived data and told her, "Come back round in a week."

And off she went, clutching her notes to her chest, excitement and trepidationlapping at the top of her skull.

Saturday morning Cayla was making sandwiches for a hike and picnic in Torrey Pines, to cheer them both up, when her phone jangled. She stared at it for a moment. It *couldn't* carry bad news, not yet. Not about Rish. And not on her phone. Unless it was some other bad news. She slid open her phone carefully, as if it were hot.

"Miss Kalinauskas?" Maune's voice carried a touch of hesitation. "I don't wish to be intrusive, but are you all right?"

"What? Oh, yeah, I'm fine."

"When I didn't see you on Wednesday and you didn't respond to v-mail. . . ."

"Oh, well, my connection at home is down and I've been waiting for a repairman," she lied smoothly.

"Ah. Right. One gets used to certain patterns. . . ."

After Maune rang off, Cayla relayed the conversation to Rish. "Maybe he was really worried about you. Maybe he has a crush on you," Rish teased. Cayla blushed. Rish went on: "It wouldn't be the first time."

"He knows I have a boyfriend. I'm sure I've mentioned you or something." Although, as she searched her memory, Cayla could not recall when she had done so.

"So he's the perfect Brit and keeps his feeling to himself. Even an old crust like him must love something besides his telescope."

Aside from his dog, she wasn't sure about that.

Cayla had found the first event—the first burst—the previous fall, a year after she had started working with Maune.

Working for Maune was both exhilarating and exhausting. He spoke quietly, was never angry or sarcastic, never threw things—unlike some of her friends' advisors—but he asked questions as endless as the sea, and when she floundered he sent her away to look for answers.

She took to considering all the angles and possibilities before seeing him. She worked harder preparing for a meeting with Maune than for her classes. A good word from Maune could make her career. Although Cayla felt, deep down, that Maune's admiration was beyond her reach, she hoped for at least his respect. That desire drove her to work seventy, eighty hours a week.

And she learned. She feared she was putting in too little time in her second year courses, and she missed half her study group sessions, causing her to dread the upcoming quals. But she knew the astronomical databases like the back of her hand and had a dozen analysis tools in her handheld, their algorithms disassembled and personally tweaked by her.

When she finally sat for the quals in the spring, she stared at the questions, terror rising inside her. She was able to write down something for barely half the questions, and only then because of things she had come across in her reading for Maune, or mathematical tricks he casually mentioned to her.

When the results were posted, she couldn't bear to look. Instead she sat rooted at her desk, until one of her office mates, Bai-lin, stopped in. "Why are you even still here?" Bai-lin asked, and the words sounded like an accusation. "Well, we're all going to a bar. You probably don't want to come with us...."

"Sure," said Cayla, standing up with a heavy heart.

At the bar her fellow students moaned about their scores, but not a word was said to Cayla until Bai-lin piped up: "Hey, Cayla, you can show me how an American girl talks up guys. Like those two there."

Before Cayla could protest, Bai-lin grabbed her hand and dragged her over. "Say something," Bai-lin urged, elbowing her, but Cayla just stared miserably into her beer. Bai-lin sighed and said loudly. "I guess you can't believe the stereotypes. I'm the fun one, and she's miss super-smart study-all-the-time no-time-for-dates."

"Don't tease," Cayla muttered, wincing.

"This one, she got the highest score on the astrophysics qual," Bai-lin said, "by a factor of two," and Cayla felt as if her legs had been kicked out from under her. It was all she could do to keep standing. "Now everyone else has to work hard just to be second best. How rude is that?"

Cayla lifted her head, her mouth open, but Bai-lin had already slipped away through the crowd with one of the young men.

"I'm Rish," the one left behind said.

"It's not true," she said.

He smiled. "Well, my parents insist it is. Like fish, but with an 'r.'"

"No, I mean about the astrophysics qual."

"Why, what was your score?"

She felt flushed. "I didn't look. But I couldn't—"

"So, a statistical fluke, then?" When Cayla didn't answer, he added, "Which is of professional interest to me."

"You study statistics?"

Rish laughed. "No, history. And I've always been fascinated by accidents. You know, there's the Great Man theory of history, all Hitlers and Lincolns and Gandhis, and then there's the Inexorable Wave theory of the masses. But I think it's neither. It's the guard who falls asleep, the cook who uses spoiled meat, the cab driver who gets lost. What if the art teacher said, I'll give little Adolf an A? If Mary Todd said, Abe, I have a headache tonight, let's skip the play?"

"Sounds like the flip side of the anthropic principle."

"Huh?"

Cayla lifted her own half-full glass. "Well. The anthropic principle states that the universe is the way it is because if it were different, we wouldn't be here to write papers on it. There are some physical constants that, if they were different, stars wouldn't form, or there wouldn't be enough carbon and oxygen. A roll of the dice. Most people think it's a circular argument."

"*Anthropic.* I like that word. I'll try to work it into my dissertation." Rish took a swallow of his beer. "But to be honest, I'm actually working on the influence of technology on warfare and trade in Asia. And you, miss no-time-for-dates studies-all-the-time?"

"Well, not *all* the time," Cayla said.

Cayla did work long hours that summer. When she had energy left she went out with Rish, or home with him. But every morning, even when grainy-eyed from too little sleep, she got up, wrapped herself in her worn terrycloth bathrobe, flicked on the terminal, and began to work.

At the beginning of the fall quarter she presented her initial results to Maune. Her data mostly agreed with the simulations, although she admitted to being troubled by the sensitivity to parameters.

"It's chaotic, of course," Maune said quietly. "The key is finding a robust statistical characterization."

"The temperature. . . ."

"Are you sure you can define temperature? Is the system in thermal equilibrium?"

Cayla stood there with her mouth open.

"You look as if you've been invited to your own funeral," Maune said. "Do cheer up. You simply have to be prepared for the inevitable sniping from referees. The answer, as ever, is to keep working."

It was hard to focus at first, but she did just that, and the next day she found the first burst.

Chastened, Cayla had begun by hunting in other bands. She started with the V or violet filter band, then worked her way through the B (blue), R (red), and IR (infrared) band.

But the data in each of these bands were sparse, just a few pixels here and there, so sparse as to be nearly useless. "But *nearly* useless means they aren't quite useless," she whispered to herself.

It struck her that she could overlay the data, patch together a little of V and B and R and IR. Individually, the bands didn't have enough data to make statistical sense, but combined . . . It was a trick Maune himself had used.

So she overlaid the bands and stepped through the data in time.

And she saw it. Late January 2019, a bright spot, a single pixel, less than a microarcsecond across, but there was a signal in every band. In any given band it looked like a random fluctuation, but they all had the *same* fluctuation.

Intrigued, she looked closer. The event hadn't lasted long; she had UV data with a twelve hour sampling rate and it was gone after two cycles.

But it was odd. It was compact, intense, but less energetic than a supernova or even a nova. And there were no stars nearby.

A week later she was about to write it off as a fluke, when she found another event, this one from 2025 . . . but in a different part of the LMC. The same compact nature in space and time; and both had broad, non-thermal spectra.

Cayla didn't dare tell Maune. Two "events" could be statistical accidents. After all, she was mining hundreds of petabytes of data, and was bound to find some weird coincidences. "I need another burst," she told Rish.

Meanwhile, she continued to gather data on shock fronts in the interstellar medium, creating time-lapse images in false color, showing the oscillating flow of energy and pressure like the flapping of a butterfly wing. But the meaning of her events, her bursts, still eluded her.

"A signal from little green men?" Rish asked. "Or, hey! Maybe it's a starship, crashing, an accident." Cayla shook her head. "Why not?"

Cayla put her head in her arms. "Because I actually considered that. But if it were moving at relativistic speeds I'd be able to see it smeared across a few pixels."

"Still haven't showed it to Maune?"

"He seems distracted these days, staring off into space. He asks me to repeat myself. Maybe he's disappointed in me."

"I doubt that. He's an eccentric astronomer, remember?"

Cayla mined data, week after week, working from mid-morning into late night. Rish packed up lunches for her, and was clearly bottling up his own frustration, and Cayla felt whipped by guilt and ambition from all sides.

Then, in early May, shortly after the campus carillon rang midnight, Cayla, sitting in her office, found an event from 2018. It looked just like the other two. She danced in the parking lot beneath a quilt of clouds, woke Rish to tell him the news, and found The Lump.

The wait for scan results was torture. For his part Rish adopted black humor. "It could be a cost-cutting measure," he quipped. "By waiting longer to tell me, I'll die faster and save them a bundle. Oh, don't look so glum," he said when Cayla winced. "It's so awful it's almost comical. Or something."

"Don't make fun," she mumbled.

"You should go in. With you rattling around here and offering me tea every fifteen minutes, it makes me nervous."

"Are you able to focus? On your work?"

He sighed. "On my diss? Not a chance. But to be honest, you're reminding me of my *nani* taking care of me when I was sick as a kid, and I don't want to superimpose you on my *nani*. Not sexy at all. Please. Go in."

At work, Cayla's automated search algorithms had dredged up two new candidate bursts, one within the Milky Way, another on the edge of the Large Magellanic Cloud. The luminosities were roughly one-trillionth of a canonical gamma-ray burst, so she thought of them as picobursts.

Still, she hesitated to go to Maune. *What do you think these bursts are?* she imagined him asking, and she had no idea. It's publishable, she kept telling herself, publishable data, but she wanted the data to make sense. *Yet, sometimes the universe doesn't make sense,* Maune's cool, clipped voice came back to her. *It's a sequence of cold and improbable accidents.* She blinked. She didn't remember him ever saying anything like that. In her experience he was more likely to say, *We must try to understand the universe.*

Frustrated, Cayla went home, home to find Rish pacing their tiny apartment. "The bastards, the bloody bastards," he said, breathing hard, "the stupid *pricks!*"

Cayla stopped in the doorway. "What? What is it?"

"They lost the data from the scan. I have to go in for another."

She dropped her backpack and swiftly went to put her arms around him, but Rish was stiff with rage. "When?" she asked.

"Oh, they were ever so nice, said I should be at Sharp in an hour." He pulled away from her. "I don't think I should drive, I'm so angry—"

"Of course I'll drive you."

Down at the corner rent-a-ride a duo was, thankfully, available. Cayla waved her credit wand at the lock and they jammed themselves into cramped seats. As they wound through thick La Jolla traffic, Rish cursed the doctors. "Two weeks they make me wait, and then the *bloody* bastards erase it."

"You have a right to be angry at them," Cayla said as she sped along, weaving past the other cars. *If we're late it'll be my fault.* "I know if it were me, I'd be about ready to bawl my eyes out—"

"Watch it watch it WATCH IT!" Rish shouted, grabbing the dashboard. In front of them the brake lights of an old-style hybrid flared red as it fishtailed, tires shrieking, bumper looming large. Cayla stomped on her own brake pedal, quickly looked left then right but *oh no oh god* thick traffic on either side but she saw a hole she thought she hoped and yanked the wheel to the right, barely missed clipping the hybrid even as it slammed into a small truck stopped dead in the middle of the road. The sound of crunching plastic and crumpling metal made a horrible, stomach-knifing sound and it took all of Cayla's strength to keep her eyes open and looking forward even as in her peripheral vision she saw shattered glass and mushrooming airbags and bits of car flying up in the air.

And then they were past the accident, the only sound the polite hum of the duo's electric motor.

Rish turned around in his seat to look back. "Jesus!"

"Do you want me to pull over?" Cayla asked, trying to keep the panic out of her voice. "Should we call—?"

"No, other people are stopping." Rish slumped in his seat, facing forward again. "Sorry I yelled," he murmured, "it was just . . ."

"It's okay."

Even sitting in the waiting room, Rish commented, "I still feel shaken. Shaken, not stirred."

Cayla rubbed her forehead. "We were lucky."

"Well, a different roll of the dice and they might have been scraping Rish and Cayla chutney out of that car. Is this an anthropic situation?"

Before Cayla could respond, a nurse called. "Mr. Chandan?"

Rish stood. "Wish me luck."

"Luck is an illusion," Cayla said automatically, but she was thinking, *a different roll of the dice*, and her thoughts rang her body like a bell.

And as she sat in the cool, ticking quiet of the waiting room, she began to make estimates in her head.

She did not have Maune's experience and vast internal library. But as she worked out the numbers, skipping over factors of pi and two, she got a taste of what it must be like to be him.

She looked up and saw Rish standing in front of her. "Sorry it took so long."

"Long?" She glanced at a wall clock. She'd been there for over ninety minutes. "It's okay. I was just thinking. About my data." She stood, grabbed her purse, and followed Rish out the double doors.

At the elevator he asked, "And any interesting thoughts about your data?"

"Yes," she said, "but I'm probably wrong."

Cayla did not find where she was wrong.

Instead, she found more data, more events, that fit into her scheme.

"I must be crazy,"

"Everyone is crazy," Rish said. "Anything in particular you are crazy about?"

"My data. My explanation for my data."

"Which is what? Little green men?"

She sat down heavily at the table, dropping her knapsack on the floor. "Little green men I wouldn't feel so bad about." She spread her hands. "You heard me talk about dark energy?"

"Talk, yes. Understand, no. All I remember is, dark energy something something expanding universe something something accelerating something something, or something."

Cayla smiled. "Actually, that's a reasonable summary. We know the universe is expanding, we know the rate of expansion is accelerating, and something must cause that acceleration. But no one knows what that something something is. Or knew." Her smile grew into a grin.

"Let me guess...."

"The energy from these bursts, *my* bursts, roughly equals the kinetic energy added to the expansion of the universe. Hard to dismiss it as a coincidence."

"So you've found the dark energy? That's exciting. It is exciting, right?"

She frowned. "If it's true. Maune will probably figure out in eight seconds where I went wrong."

"So see what he says. Come on, it's Friday, you won't see him until Wednesday. Tell me you can wait that long without going crazy."

When she rang Maune his voice sounded distant, as if under water. "Hello."

"Hi, Professor Maune? It's Cayla. Kalinauskas." She thought her voice sounded tremulous; she swallowed and forced herself to speak evenly. "I'm sorry to bother you at home, but I found some interesting data—some *really* interesting data. I've been going over it and—"

"I don't wish to talk now." The line went dead, and Cayla stared at her phone.

"Oh," said Rish. "Bad idea?"

Cayla glared at him. "I am *never* going to listen to you again," she said.

The entire weekend Cayla felt like throwing up. "Think about it," Rish said as she paced back and forth. "He's not going to fire you for calling him at home, one time."

"Who knows what he's capable of?" Cayla muttered.

Monday morning she was calmer. But when Wednesday rolled around, she could not help but stand in the second floor hallway, waiting and watching out a window. At nine twenty-eight Maune entered the building. She sighed and went back to her

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office. Better to give him a few minutes, maybe half an hour, than to ambush him. But to her surprise he came straight to her office.

"Good morning, Miss Kalinauskas," he said, looking paler than usual, and although he had shaved he had missed a few spots. "I know I was abrupt when you called. You see, Kaija, my dog, had passed away."

He stood there for a few uncomfortable moments. "You said you have some data." Cayla took a deep breath, and was about to launch into her prepared speech, when he said, "Write it up, send it to me," spun on his heel, and marched away, leaving Cayla feeling all twisted inside.

Cayla found it hard to focus as they anxiously awaited the scan results. Rish was pacing again, muttering to himself. "I'm not one to create catastrophes," he said at one point, "but what if it's serious? Is just waiting around for weeks really a good idea?"

In the meantime, Cayla forced her attention on the paper, although sometimes the words swam before her eyes and she found herself crying with frustration and fear. She imagined Maune saying, *It's the worst rubbish I've ever read, Miss Kalinauskas.* She sighed and soldiered on.

When she couldn't stand the sight of her sentences any more, she sent it to Maune by v-mail. *He'll probably tear it to polite bits, then tell me it was a good exercise.*

And she waited.

She heard nothing.

As the hours and days ticked past, she felt an uncomfortable tide of rage rise inside her. "He could at least acknowledge he received it," she said to Rish. "All this waiting is terrible." Then she quickly added, "It's not like you having to wait, which is really terrible."

"Ahh, we're both on edge," Rish said. "Years from now, I'll still be waiting for the results of my hundred and twentieth scan, and you'll still be sitting, watching your v-mail icon. Terror fades into dull boredom. Are you going in tomorrow? It's Wednesday."

"Yeah, I guess."

Cayla dragged herself onto campus with a sense of dread she could not explain, most of all to herself. But Maune did not show at nine-thirty, or by ten. Cayla didn't dare call him at home, not after her previous fiasco.

Wandering the halls, she saw an open office door. "Professor Huerta?" she said, peeking in.

She expected a scowl, but instead Huerta smiled broadly. "Cayla! Come in. I'm on sabbatical this year—Princeton—but came back this week for a Ph.D defense. How are you doing? I'm having lunch with Howel today, and I was going to ask him how your research is going. But you can tell me yourself."

Cayla eased herself into a chair, hugging her arms close to her body. "Okay, I guess."

"That doesn't sound very promising."

"Well, I have these odd events I've found."

Huerta folded her hands and leaned back. "Tell me."

So Cayla repeated her story about the bursts, ending with the rate of energy deposition. Huerta laughed aloud. "Oh, wow, that's marvelous! So you think you've discovered dark energy?"

Cayla ducked her head. "It's probably just a coincidence or something," she mumbled.

Huerta scratched her arm. "I don't believe in coincidences. But do you have a mechanism? Can you explain *why* your picobursts cause dark energy?"

"Well, actually . . ." Cayla started, then stopped.

"You have a mechanism?"

"It's pretty crazy."

"Crazy is better than none."

That's not what I remember you saying, Cayla thought. But she plunged on. "Remember that, uh, crazy paper I did for your seminar? The one that took the many-worlds interpretation of quantum mechanics seriously, and suggested that dark energy was the pressure from multiplying worlds?"

"Of course. But the power was several orders of magnitude too low to be detected."

"Uh-huh. But that's only if the power is distributed evenly—linearly. I went back and reread that paper. And they used a linearized approximation." She stood up. "The whole point is, you only get a coupling between different, whatever, universes through a nonlinearity." Quickly she wrote out Schrödinger's wave equation on Huerta's e-board, with a nonlinear term. "But they never checked the stability of their linearization. It's not stable at all. You should get Rayleigh-Taylor instabilities, just as in shock waves in the interstellar medium. And the instabilities are going to be larger and faster in galaxies, because there are more quantum events."

Huerta held up a hand and shook her head. "No, no. As appealing as this is, it's too much to swallow. Surely we'd see some effect in quantum mechanics. But all the searches in beryllium frequency shifts in the 1990s failed."

"About that . . ."

"Yes?"

"I dug around a bit, and about ten years ago some experiments found that if you measured the Casimir effect with a cavity filled with radon, the force was significantly different. It was published in an obscure journal and no one connected it to nonlinearities in the Schrödinger equation. But the magnitude of the effect is exactly right."

Huerta stared at Cayla, then chuckled.

Cayla hung her head. "I know, I know it's silly . . ."

Huerta waved a hand. "No, no. I was just laughing because I had told Howel you were the best student I'd seen in five years. I was wrong. You're the best I've seen in twenty years."

"You don't think this theory is stupid?" Cayla asked.

"Have you written it up?" Huerta asked.

"Yeah, although I imagine Professor Maune will want me to take out the crazy bits."

"Has he said so?"

Cayla looked down at the stained carpet in Huerta's office. "I sent it to him, but he hasn't said anything." She almost blurted out, *I think he hates it*, but she couldn't bring herself to confess that to Huerta.

"I'm sure it gave him a lot to think about. He—oh, good morning, Howel."

And there was Maune, in Huerta's doorway. He looked so pale he was almost translucent.

"Howel, Cayla has been telling me about these bursts she's found in the LMC and in the Milky Way, and this most extraordinary theoretical interpretation she has. It's fascinating, don't you think?"

Maune's eyes took a moment to focus on Cayla. "Yes, Miss Kalinauskas has done some good work, yes, good . . ." He gave the smallest of smiles. A picosmile.

Standing up, Huerta said, "Listen, Howel, if you don't mind, why doesn't Cayla join us for lunch?"

After what seemed like a long pause, Maune nodded again. Cayla felt anxiety, and anger, rise inside her. "I don't have to, really," she said.

"Cayla, I would like you to," Huerta said.

"Okay, let me get my wallet."

She ran up two flights of stairs to her office and found Rish sitting at her desk. He stood up and hugged her, which surprised her; the office was full of other grad students and Rish was not one for public displays of affection. "Good news," he whispered in her ear. "The scan, it's not malignant, not even a benign tumor; just fatty cells. I didn't quite understand all of the diagnosis, but the lump's nothing to worry about."

"Come to lunch with us," she said, grabbing his hand. "Please. With me and Maune and Huerta. We can celebrate."

"Sure," said Rish as they walked down the stairs. "But let's just keep it to ourselves, shall we? I'm a little uncomfortable discussing my testicles in public."

Cayla laughed, feeling light-hearted for the first time in weeks. "I'm going to need you at lunch. I told Huerta about my work and she didn't yell or laugh at me, and she's very smart, as smart as Maune, and very tough. But he's acting strange."

"Stranger than usual?" Rish asked as he draped a warm arm around Cayla's shoulders. She didn't answer, only leaned against Rish, burrowing into the fragrance of his body.

They ate at the new faculty club. Huerta ordered sparkling wine with which to toast Cayla's work. At Huerta's urging, Cayla recited the facts of her data, the way she had used Maune's own trick to sift the events from the data. But Maune seemed inert, almost glassy-eyed.

Then he suddenly rumbled, without looking at Cayla, "While your data are solid, I'm sure, it might be good to speculate on possible mechanisms for your bursts."

There was a cold silence. "But I put that in my paper." She wasn't sure if she wanted to yell at Maune or run out of the room. She took a deep breath. "Did you even read it?"

Huerta interjected, "She's got quite a puzzle, and quite a story. The power is similar to dark energy, and she thinks—" Huerta broke off. "Cayla should tell you herself."

Maune pushed the food around on his plate with a knife. Rish said, "Actually, you've never really explained your big idea to me, either."

So, slowly, Cayla laid out her explanation, adding technical details for Maune and Huerta and translating for Rish.

"Whoa, wait a minute," Rish said. "You're talking about *alternate universes*? Where China colonized the Americas, the Nazis won World War Two, that kind of thing?"

"When you say it like that, it sounds crazy," Cayla said.

"A mistake," Maune said with a hollow voice. He was hunched over, like a curled bit of dried meat.

Cayla's heart turned to a block of ice. "My . . . mechanism?"

Huerta said with some urgency, "Listen to her, remember what we talked about," but Maune shook his head.

"So I'm wrong," Cayla said, and she could not keep the tremulousness out of her voice. "Could you at least tell me where I went wrong?"

"I shouldn't," Maune rasped. He turned to Huerta. "Shouldn't have taken her on."

Cayla felt faint. Her mouth was dry as she said, "I'm sorry I wasn't good enough. I tried so hard," she added, her voice rising, even as she was astonished at the words coming out of her mouth, "I spent every second of it trying to live up to *your* standards, but I'm sorry I was such a disappointment you didn't even bother to read my paper—"

"You didn't—" Maune's mouth hung open and his eyes fluttered upward, as if looking for his next line. "It's like . . . like . . . a bit of Las Vegas, gone bad. Betting the odds will go your way. More than a little bit of wish fulfillment . . ."

Cayla drew in a sharp breath. "You think I'm making this up?" *Maybe he means I was a bad bet as a student*, she thought.

"I think we're all just making . . ." He pushed back his chair and stood. To Huerta he said, "I wasn't ready. I tried, but I keep thinking, if only, if only . . ."

People were staring at them. Maune said to Huerta in a tight whisper, "I have to go

to the cemetery." Maune drifted out through the door of the faculty club, a stick figure listing to one side.

Huerta quickly settled the bill and they went out into the brilliant sunlight. They could smell the salt scent of the sea on a light breeze.

"Cayla," Huerta began.

"He didn't even listen to me, did he?" Cayla said. "So I was wrong to think I'd discovered something, something *huge*. I mean, I know I'm just a student, but he didn't even read my paper." Inside she was thinking, *And all this time I was agonizing over Rish and I didn't let it show, I didn't let it affect me...*

Huerta's dark eyes tightened, and Cayla's stomach jumped, but the wine kept her words flowing even when she knew she should stop: "So he's sad about his dog, but why snub me like that and rush out to the pet cemetery? It's childish."

The professor's head tilted slightly to one side, just like all the times in seminar when she corrected Cayla. Huerta said, "He's not going to the *pet* cemetery," and Cayla felt a very cold spot at the back of her skull.

Huerta paused, looked up at the blue, blue sky. "Howel is a very private man, so I am reluctant to talk about it. But you don't know. He is going to his wife's grave. She died about five years ago. Six years now."

The sun shone and Cayla thought she could feel the world spinning beneath the sun, but that could have been the alcohol. Huerta continued, "It was an aneurysm. I was having dinner with them when it burst. She just slumped—" Huerta took a deep breath, blew it back out. "It was *her* dog. His last link to her."

"I didn't—"

"I told him to take a student, you, a project to occupy his mind. I—" Huerta fidgeted. "I should go after him, make sure . . ." and she hustled away.

Cayla stared after Huerta. Her stomach was a wet cloth, twisted into a knot. "Let's go," Rish whispered.

But Cayla did not move. She wished she could take back her words, scrub them from her mouth, but, oh God, she could not see how. And although Rish was standing right next to her, and she could feel the warmth of his body and feel the pressure of his arm against hers, and she could feel the breeze in her hair and the sun on her face, she also felt alone, a small speck in the cold and empty universe. ○

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FRIENDLESSNESS

Eric Del Carlo

Eric Del Carlo's fiction has appeared in *Strange Horizons*, *Futurismic*, and many other venues. He has written novels in collaboration with the late Robert Asprin, including the pre-Katrina New Orleans mystery *NO Quarter* (DarkStar Books), and on his own, such as *Nightbodies* (Ravenous Romance).

Readers can find out more about his work at www.ericdelcarlo.com. Eric tells us that "Friendlessness," a story of social isolation that is his *Asimov's* debut, is inspired by that rusty old saw: "Write what you know."

Daric Dandry spent the final forty-two minutes of his fifty-five-month Friendship with Maddox Colburn pleading, with rapidly dwindling dignity, for Maddox not to leave him. Daric knew his last payment was running out. He couldn't afford Maddox anymore. But even so, he begged and sniveled at their familiar table at the retro coffeehouse.

Maddox, of course, professionally maintained their Friendship for every one of those forty-two minutes, and so tried to comfort Daric. He flashed his dazzling, assured smile. He encouraged Daric toward nostalgic reminiscences—that wild trip to Reno they'd taken on impulse, the all-night movie and pizza marathons with gales of laughter interspersed by sober grace-note profundities. Those many poignant instances of intense camaraderie had been unsullied by bickering, rivalry, oneupmanship—in fact, untouched by disagreement of any kind. Remembering these interludes just wrung Daric's heart all the worse, knowing they were gone, never to be repeated.

He made a spectacle of himself, and knew it, and couldn't help it. He had never been suave or socially adept. It was why he had engaged such an aggressively cheerful and confident Friend.

"What am I going to do without you?" was what he was saying, for maybe the hundredth time since they had sat down, when time was up. Daric looked longingly with swollen eyes across the authentically graffiti-scared wooden tabletop, catching a final glint of Maddox's consoling smile and gleefully shrewd eyes. Then the broadcast inhibitors kicked in, and that face fuzzed into static, and Maddox turned away, and Daric was simply unable to stare at him any longer, even if he had wanted to.

He sat where he was for another minute, breathing in the burnt root smell of the "coffee," feeling a weightlessness—an absence—in his chest. He looked around and saw other heads turn away, embarrassed for him.

Palming his cheeks, Daric Dandry belatedly remembered to engage a Privacy. His socweb 'plant emitted a nullifying field. He was, therefore, literally faceless as he slunk away from the table and his erstwhile Friend.

He had juggled his finances to keep Maddox as long as he could. Well past the time, really, when he could even conceivably afford him. Three nights ago, at one-

thirty A.M., a tow truck had slammed across the lip of Daric's driveway and scooped up his car. Utilities were final-noticing him. Next, of course, would be the house.

And yet he had done everything to retain Maddox Colburn just a little while longer, a little . . .

They couldn't fire him from his job for his low socweb score, nor for being Friendless. But they could do this:

"Your latest evaluation is, frankly, abysmal. And it's reflected in your numbers, Dandry. Your productivity is—how do I say this?—unacceptable. I'm afraid the firm has no choice, none at all, but to . . ."

That was the job.

He had, he knew by now, taken on too many Friends initially. A flush of acquisitiveness had come with his prestigious position at the firm—thus, the house, the sporty car he hadn't really needed. But what a wonder to be surrounded by companions, confederates, jolly, jovial, rib-nudging, back-slapping chums. Daric had savored their masculine raucous ways, how they always had some rollicking activity in mind. No matter what deep-seated doubts Daric had about himself, his Friends would unfailingly sweep him up and away, off to social adventures the likes of which he had never known before. Never were they cruel to him; never was he challenged or threatened.

But he had overextended, and his finances had started to crumble.

In the end he had tried to retain only Maddox, his favorite Friend, the one he'd known the longest, with whom he had shared endless emotional intimacies, who was his supreme confidant. His best Friend, truly.

The financial troubles he'd created for himself had indeed affected his job performance, and the firm was right to fire him. He knew that. He knew it even as he packed a single bag with a paltry number of belongings, and left the house.

To say he was socially inept was, he knew, to heap praise on himself. His socialweb score was disastrous. Always had been. Most everyone had several null-sum Friendships, those entered into by parties whose scores canceled each other out. Daric had none of these. So it had been since age sixteen, the year of his first socweb score, which was determined by number and duration of social interactions. He couldn't even start to build a statistical base. Nobody, it seemed, was interested in registering an association with him. And who could blame them? He created awkward silences wherever he went, blurted out non sequiturs at inappropriate moments, couldn't summon any insights, jokes, observations, or complaints that anybody wanted to listen to.

It became easiest for him to do nothing, to make no socializing efforts. That lack of comradeship left a hollow in him, but he had plans to fill it. He was socially graceless, true, but he had his intellect. He was not helpless.

So it had been through his adolescence; but long before then he had set himself a goal of financial success, and had pursued it doggedly. By the time he was an adult, he had made a place for himself in his business field, and he could afford professional Friends, which allowed him to feel content and confident. That in turn had stimulated his productivity at the firm.

Still, there had been a time before all that, before he received his socweb 'plant. Daric Dandry had, inevitably, once been a boy. And friendships had been different back then.

Incredibly, you could still hitchhike. It seemed an activity from another era, one that should have been erased by advancing technologies and modern cultural stric-

tures. But no. You could still stick out your thumb on rural roads, and the occasional person would give you a ride.

One of these halted a ten-year-old Spark and popped the door. Daric, who had already crossed some distance in this fashion—walking when he couldn't get a ride—gratefully climbed inside. He didn't have the credit for any other means of transportation. For days now he had been sleeping in a pup tent, and he smelled like it.

"I'm going ten klicks," said the older man, lifting a finger from the old-fashioned spoked steering wheel to point ahead, "that way."

Daric, settling in the seat, said, "I'm . . . that way . . . uh, going." It was typically fumble-tongued of him. Suave replies never made it out of his mouth, leaving behind only their echoes, unspoken, in his head. Why couldn't he have said: *Ten klicks is a lot better than none?* That would have shown a mastery of the language, even a hint of wit. This older man would have immediately taken him more seriously. But it was already too late. It was a lifetime too late for Daric.

In his private misery, he sat with his bag on his lap. Every interaction he'd had so far on the road, had necessitated a social negotiation. So it was with every human engagement. Some people made their livings as Friends. But the socweb served to regulate how people interfaced with each other. With 'plants, everyone was aware of the score. Daric already knew that this interaction was lost to him.

"So, where you headed?"

What caught Daric most off-guard was the older man's forthright tone, how he seemed to demand a response to his question. Some drivers liked to talk; it was why they picked up hitchhikers. So far, though, the ones Daric had met had been content to carry on monologues, not even using him as a sounding board. Daric normally only interacted with people on the most basic, least impactful level. He'd never learned how to do anything else.

Daric answered with the name of the town, carefully enunciated. Was this going to become a . . . Conversation? Fear and excitement prickled his flesh.

The driver grunted. "I've never been down there." That comment seemed to indicate that, indeed, a Conversation was afoot.

Turning shyly, Daric took deliberate note of the older man for the first time. He had an average socweb score, maybe a few points below the national median. But it was categorically better than Daric's dismal number.

He also perceived the subtle gold glow ringing the driver's neck and knuckles, the telltales of a failing restorative treatment. Nothing unusual there. Everybody who underwent a Ricca-Hixon Rejuve or a SkinCorp Feenix had failure to look forward to, eventually. But this meant that the older man might be *much* older, perhaps old enough to have been an adult before the socialweb's sweeping implementation. What had started as a voluntary socializing movement had become institutionalized, a means of identifying people. The outdated analogy said that it was like the Social Security number, which had evolved beyond its initial purpose to become an identity check.

For some reason the thought of this man being from that antiquated time unnerved Daric, adding to the stress of their burgeoning Conversation.

The driver talked sports for a few minutes, until it was clear that Daric had nothing to contribute. He switched gruffly to politics. Daric, heart thumping against his breastbone, lunged at the first political name he could think of when the older man asked him who he favored in the approaching electoral cycle.

The older man, who turned out to be a diehard Re:green supporter, savaged Daric's candidate, who apparently was the Patriot Party's current pick. Daric had never voted in his life; he didn't plan to start. Evidently the driver really did come from a by-

gone era, when people had had definable and vehement political views. Most everyone these days understood that politicians got into office on the strength of their socweb scores.

When they came to a halt, Daric thought he'd blurted something unforgivably gauche and the man was kicking him out of the vehicle. But the stalwart Re:greener merely indicated the winding rutted track that was his turnoff.

Daric got out, muddling his thanks.

As the Spark drove off and he began walking, Daric was shocked to discover that the tense interaction had ironically moved his socweb score up a few inconsequential increments. He tried to hold on to the strange sense of victory this gave him, but couldn't sustain it. That night he made camp in a field off the road and wept in the tight sleeve of his tent over the loss of Maddox, with whom he'd never had a tense Conversation . . . aside from their last.

The beach town was a reimagining of itself; or that was how it appeared to Daric as he advanced through it. Its dimensions hadn't changed. There had been nowhere for it to sprawl, notched as it was into the crags of the coastline.

But the row of fast food franchises was gone. That was typical; they were hard to find anywhere these days. Daric recognized businesses and buildings, parks and residences, from better than a third of his life ago. Other structures, however, were totally unfamiliar. Memories reverberated, and like echoes, he knew, they were distorted and not entirely trustworthy.

Still, the scenery fascinated him. He'd never visited after he'd departed, and he understood why. He'd left no family here. This sleepy little burg had had no credible connection to the mature and lucrative life he had fashioned for himself. This place was merely his starting point.

The town was still a functional entity. It didn't look economically depressed—or no more so than he remembered it being. It was a modest place to live. It smelled of the ocean. Whorls of sand stirred at the intersections. Sandals slapped the pavements. The diners and cafes were un-ironic. No retro chic here.

Daric Dandry, unshaven, humid with his own smells, walked with his one bag through the streets and spoke to no one. It was much as it had been for him as a lonesome, awkward schoolboy who wasn't terribly versed in matters of hygiene. He'd had long, flat hair that dropped in oily fronds across his eyes. He'd picked up the habit of gnawing his thumbnails, he suddenly recalled. The image of those ragged raw crescents was a fact of personal history he had somehow misplaced years ago. The town was prompting these remembrances.

Again he was leery of trusting the memories. Had he, for instance, shoplifted an expensive, poseable superhero action figure from Myerling's Toys? Or had he only planned the crime in ardent detail, playing out the fantasy with its thrill of theft and delirious reward? He didn't know. If he'd ever actually owned the doll, he had no clue what had happened to it.

Had he ever climbed to the highest level of the playground castle in the park nearest his home? He vividly remembered being afraid to scale high enough to crawl out onto the parapet like the braver kids did. But had he ever done it? He might have. Or he might simply have imagined it often enough that the event had gelled into a memory.

Had he ever kissed Kimberly Chin on the mouth . . . ? No. He sure hadn't done that, and no need to wonder about it. His first kiss he remembered, and it hadn't been with the girl he'd had such a horrible adolescent crush on. Romance—or sex, anyway—was far less demanding than sociability, he'd discovered. His first everything of that nature he recalled with exacting specificity.

Just as he distinctly recalled the hollowing ache of being friendless back then. Or, almost friendless.

Certainly he'd been Friendless. You couldn't get 'planted before you were sixteen. This town brought back the earliest portions of his life.

He engaged with no one as he made his way through the hamlet. Socweb scores registered within the standard broadcast radius, mostly, it seemed, from young adults wanting to flaunt their numbers. Among them were a few whose scores were so polished and commanding that they must be professional Friends. Daric didn't employ his Privacy. Let them see; let them all see what a miserable score he had.

He headed to the beach.

It was pebbly and gobbed with foam, peppered with bits of shell and roped with kelp. The sea sloshed gray and black. Its immensity was tireless. The wind had a chill, but it didn't seem to be singling him out.

Daric stood and stared outward from the shore.

What happened then happened in stages that he wasn't immediately conscious of. He had no memory of setting down his bag. He merely found himself unburdened, the bag flopped over on the sand beside him. Then his feet were bare. Then his toes were awash. The sky had changed, and a deep green had come to the waves. Then his pant legs were cuffed high, with no memory in his fingers of rolling them up, and the muscular water was dragging on his calves.

"It's a big ocean, friend. If you're going to do that, I'd appreciate if you did it on some other beach."

Daric turned. It was the first fully conscious movement he'd made in what, he realized abruptly, might well have been hours. Twilight was approaching. He was stiff with the cold.

He squinted at the uniformed figure. A man's voice, cowboy-laconic, casually sarcastic; but there was a tension there. This man was concerned about Daric, because it was his job to be so.

Daric saw where he'd left his bag, his shoes, his socks. The tide hadn't come in toward him; rather, he had moved out into the water. Now, uncertain how he had gotten here, he trudged back onto the shore.

A light, open-air vehicle was parked behind the man in the vaguely forest ranger-type uniform. He wore sunglasses and had a fringe of beard. And Daric recognized him. Here, then, was the ultimate memory prompt. Emotions wheeled in Daric. He hadn't felt anything this keenly since that final scene with Maddox at the coffeehouse.

Daric suddenly realized that Maddox Colburn hadn't entered his thoughts since he'd arrived in town. And while he had been here on the beach, virtually no thoughts had stirred in his head.

The uniformed man slowly removed his sunglasses. He gazed intently at Daric. "You," he said softly, the sarcasm gone, "can't possibly be who I think you just might be. Can you? Are you . . . ?"

He was right. Billy Scorza was entirely correct. This wasn't possible, and it could not be. Until, after a moment's consideration, it was and it could. Billy too had been born here. So he hadn't ever left. So what? People didn't automatically relocate themselves upon adulthood. Maybe Billy had found the beach town a good fit for his grown-up self.

The uniform, though. That gave Daric a little difficulty. He looked for some past clue, some forecasting from their youth. Billy had been a school crossing guard. The faculty assigned the task to the students. But was that enough of a precursor to—to this? The badge, the green nylon jacket, the Environmental Watch shoulder patch.

"Oh, Christ, Daric . . . it is you." Billy sagged and actually staggered back a step toward his dune buggy.

"Yes, it's me. And you're you."

"I'm me," Billy agreed, even as he shook his head. "Goddamnit, Daric, I was watching you for forty minutes."

Gulls cried behind Daric. He asked with sincere curiosity, "Forty minutes? What was I doing?"

Billy's jaw tightened under the beard. "You don't know?"

"I'm . . . not sure."

"If you don't know, I'll tell you. If you do know and you're bullshitting me, you don't need to. There isn't a whole lot I can do. I'm not exactly a cop."

This was, Daric realized belatedly, a Conversation. He hadn't yet thought of this as a social interaction, but of course it was. Therefore, he should apprise himself of the score. Only Billy Scorza didn't have one.

But Daric said, "Well, tell me, then."

So Billy described the stages of Daric's progress toward and into the water, filling in the actual movements for him. Daric still felt stunned by the appearance of this—all people, *this*—individual, but he was nearly as astounded by the absence of a field from Billy. No socialweb score. No emission of any kind, not even the discernable blank that was a Privacy.

Daric said, "I don't know why I was standing out in the water." His calves were goosefleshed.

"Okay," Billy said, neutrally. The professional concern remained. But perhaps there was something beneath that. He coughed a laugh and added, "I can't believe you're here."

"I decided to come back." Not quite true; he couldn't remember at any point during his journey when he had made the explicit decision to come here. It was more like the destination had simply risen into his mind as a default.

"Well, I'm . . . glad." The bearded jaw shifted, and teeth appeared in an uncertain grin.

Daric shared that uncertainty, yet he, too, was moved to smile. The two of them were alone on the beach, in the assembling dusk.

They had been friends. Billy Scorza had, in fact, been Daric Dandry's only friend. They had shared youthful familiarities, traded secrets, hatched plans, gossiped, lied, bragged. Billy had seen through Daric's debilitating awkwardness, a social ineptitude that had kept him from forming relationships with any of their other, less patient schoolmates. Billy had perceived something worthy in Daric.

The friendship had lasted through much of their youth. Then the girl had come between them and it had ended with ugly emotional pyrotechnics. Daric had never spoken to Billy again.

But he spoke now.

"I lost everything, Billy. My whole life just collapsed. I'm destitute. I've got nowhere to live. Maybe I do know why I was out in the water."

They were standing a few strides apart. Behind was the gargle of the waves. Billy's eyes moistened. He swiped at a tear with a quick neat movement.

"Christ, Daric. If things're that bad, well, you're *here*. Right? I mean, you're back. And I could, that is, I can . . ." Billy had always been the polished one, suave even as

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a boy. Why he had taken pity on Daric, who inhabited a dank and bleak world quite apart from Billy's, Daric had never known. But now, here on this beach, it was Billy who was stammering and clumsy.

Daric ended it. He stepped forward and laid his hand on Billy's shoulder. "Thanks," he said. Billy had offered to help; the details could wait. Right now a couch to sleep on would cover all Daric's needs.

The grin came again, showing through the beard, bearing the memories of all the good and precious times that they had shared; that they had eventually squandered; and now might get back again, in some distinct but familiar adult form.

They started together toward Billy's official beach-combing vehicle.

As he was gathering his bag and shoes, Daric found himself asking, "What ever happened to Kimberly Chin?" And he was stunned again, this time by how the old pain came back, that childish hurt, that terrible sense of betrayal; and yet he immediately recognized the pain's obsolescence, knew that the hurt didn't matter anymore. He added, "You didn't marry her, did you?"

Billy stopped, his boot crunching in the sand. For an awful instant Daric thought he'd committed his worst error, an ultimate inept blurting that proved he had no business interacting with people.

But Billy said with a note of incredulity, "Marry Kimmy? Oh, come on. Don't be an idiot. Marry my junior high girlfriend? No." He stepped toward the buggy again, adding, "She's still living here, though. She's an attorney now. You should go say hello after we get you settled in."

In the vehicle Billy waited while Daric brushed sand off his feet and began rolling on his socks. He wondered why his subconscious had insisted he remove his footwear first if he really had meant to just keep going further and further out into the water.

Daric paused and looked at Billy, really seeing him now. "Can I ask you something?" Daric's voice sounded timid to his own ears, as of one broaching a delicate matter.

With a note of that sarcasm from earlier, Billy said, "Why you can't read me?"

"Why can't I read you?" It wasn't, Daric knew, unheard of for someone over sixteen not to have a 'plant. They weren't mandatory, after all, though the innate cultural pressure to get 'planted was enormous. But you were just as likely to find someone who didn't own a phone. The absence was highly unusual, even bizarre.

Billy said, "I had a motorcycle. Maybe a year after you'd left for college. I flipped it over on Hingle Drive, banged up my skull but good. It scrambled my 'plant, and the doctors removed it. Told me I could be replanted in six months. When that time came around, though, I'd gotten used to being without it."

Daric pulled on his shoes and settled back into his seat. It occurred to him how unlike Maddox Billy was. Maddox, who had been Daric's best Friend for so long, had never missed an opportunity to bolster Daric's ego, to agree wholeheartedly with him about any and every issue, to praise Daric's "profound" insights, which were really just sophistries. None of Daric's Friends had ever tempered his views or convictions. He had never been allowed to grow.

Billy was also different from the older man Daric had met while hitchhiking, who, though he had engaged with him, had been confrontational and disagreeable. This, with Billy, was different. It didn't yet feel like that old friendship the two of them had once shared. But it might, one day. Or it might evolve into something better, now that Daric could participate in the relationship as an adult who could be challenged, contradicted, even teased.

"Then," Daric said at last, "I'll have to get used to you being without a 'plant, too."

Billy hit the ignition and the buggy hummed, and they left the ocean behind. O

NEXT ISSUE

FEBRUARY ISSUE

February being the traditional month of romance, we start the issue off with a novella by **Rudy Rucker** and **Eileen Gunn** that treats us to the zany courtship of a lovely Southern California woman and her plugged-in and technologically turned-on "Hive Mind Man." In "Murder Born," **Robert Reed's** latest novella, an utterly engrossing mystery tale is blended with a remarkable idea. It's a future where murder victims may be returned to their families, but the price is high and mistakes happen.

ALSO IN FEBRUARY

Elsewhere in the issue, **Kristine Kathryn Rusch** brings us an exciting thriller about the eerie "Voodoo Project"; the Golden Age of Science Fiction isn't quite what it used to be in **Bruce McAllister** and **Barry Malzberg's** "Going Home"; new author **D. Thomas Minton** takes us on a spiritual voyage across time and space and offers us some "Observations on a Clock"; and prolific new author **Ken Liu** lands a group of diverse humans on a distant planet where they encounter a curious alien lifeform and experience the challenge of pulling a new community together. By the end of the tale, you'll know who "The People of Pele" really are.

OUR EXCITING FEATURES

While taking the Ouroboros by the tail (in a manner of speaking), **Robert Silverberg** reveals the joy of "Rereading Eddison" in his Reflections column. We'll also have **Peter Heck's** "On Books," plus an array of poetry and other features you're sure to enjoy. Look for our February issue on sale at newsstands on December 20, 2011. Or you can subscribe to *Asimov's*—in paper format or in downloadable varieties—by visiting us online at www.asimovs.com. We're also available individually or by subscription on *Amazon.com*'s Kindle, *BarnesandNoble.com*'s Nook, *ebookstore.sony.com*'s eReader and from *Zinio.com*!

COMING SOON

new stories by **Carol Emshwiller**, **Robert Reed**, **Tom Purdom**, **Benjamin Crowell**, **Kit Reed**, **Ekaterina Sedia**, **Joel Richards**, **Derek Künsken**, **David Ira Cleary**, **Bruce McAllister**, **Leah Cypess**, and many others!

IN THE HOUSE OF ARYAMAN, A LONELY SIGNAL BURNS

Elizabeth Bear

Elizabeth Bear is the author of over a dozen novels and seventy short stories. Her most recent science fiction novel is *Grail* (Spectra, 2010). She is a Hugo- and Sturgeon Award-winning author for stories that were first published in *Asimov's*.

Elizabeth returns to our pages with a murder mystery set in a stunningly rendered future India. The author would like to acknowledge the tremendous research assistance provided for this story by Asha Shipman and Kali Basu.

Police Sub-Inspector Ferron crouched over the object she assumed was the deceased, her hands sheathed in areactin, her elbows resting on uniformed knees. The body (presumed) lay in the middle of a jewel-toned rug like a flabby pink Klein bottle, its once-moist surfaces crusting in air. The rug was still fresh beneath it, fronds only a little dented by the weight and no sign of the browning that could indicate an improperly pheromone-treated object had been in contact with them for over twenty-four hours. Meandering brownish trails led out around the bodylike object; a good deal of the blood had already been assimilated by the rug, but enough remained that Ferron could pick out the outline of delicate paw-pads and the brush-marks of long hair.

Ferron was going to be late visiting her mother after work tonight.

She looked up at Senior Constable Indrapramit and said tiredly, "So these are the mortal remains of Dexter Coffin?"

Indrapramit put his chin on his thumbs, fingers interlaced thoughtfully before lips that had dried and cracked in the summer heat. "We won't know for sure until the DNA comes back." One knee-tall spit-shined boot wrapped in a sterile bootie prodded forward, failing to come within fifteen centimeters of the corpse. Was he jumpy? Or just being careful about contamination?

He said, "What do you make of that, boss?"

"Well." Ferron stood, straightening a kinked spine. "If that is Dexter Coffin, he picked an apt handle, didn't he?"

Coffin's luxurious private one-room flat had been sealed when patrol officers arrived, summoned on a welfare check after he did not respond to the flat's minder. When police had broken down the door—the emergency overrides had been locked

out—they had found this. This pink tube. This enormous sausage. This meaty object like a child's toy "eel," a long squashed torus full of fluid.

If you had a hand big enough to pick it up, Ferron imagined it would squirt right out of your grasp again.

Ferron was confident it represented sufficient mass for a full-grown adult. But how, exactly, did you manage to just . . . invert someone?

The Sub-Inspector stepped back from the corpse to turn a slow, considering circle.

The flat was set for entertaining. The bed, the appliances were folded away. The western-style table was elevated and extended for dining, a shelf disassembled for chairs. There was a workspace in one corner, not folded away—Ferron presumed—because of the sheer inconvenience of putting away that much mysterious, technical-looking equipment. Depth projections in spare, modernist frames adorned the wall behind: enhanced-color images of a gorgeous cacophony of stars. Something from one of the orbital telescopes, probably, because there were too many thousands of them populating the sky for Ferron to recognize the *navagraha*—the signs of the Hindu Zodiac—despite her education.

In the opposite corner of the apt, where you would see it whenever you raised your eyes from the workstation, stood a brass Ganesha. The small offering tray before him held packets of kumkum and turmeric, fragrant blossoms, an antique American dime, a crumbling, unburned stick of agarbathi thrust into a banana. A silk shawl, as indigo as the midnight heavens, lay draped across the god's brass thighs.

"Cute," said Indrapramit dryly, following her gaze. "The Yank is going native."

At the dinner table, two western-style place settings anticipated what Ferron guessed would have been a romantic evening. If one of the principals had not gotten himself turned inside out.

"Where's the cat?" Indrapramit said, gesturing to the fading paw-print trails. He seemed calm, Ferron decided.

And she needed to stop hovering over him like she expected the cracks to show any second. Because she was only going to make him worse by worrying. He'd been back on the job for a month and a half now: it was time for her to relax. To trust the seven years they had been partners and friends, and to trust him to know what he needed as he made his transition back to active duty—and how to ask for it.

Except that would mean laying aside her displacement behavior, and dealing with her own problems.

"I was wondering the same thing," Ferron admitted. "Hiding from the farang, I imagine. Here, puss puss. Here puss—"

She crossed to the cabinets and rummaged inside. There was a bowl of water, almost dry, and an empty food bowl in a corner by the sink. The food would be close by.

It took her less than thirty seconds to locate a tin decorated with fish skeletons and paw prints. Inside, gray-brown pellets smelled oily. She set the bowl on the counter and rattled a handful of kibble into it.

"Miaow?" something said from a dark corner beneath the lounge that probably converted into Coffin's bed.

"Puss puss puss?" She picked up the water bowl, washed it out, filled it up again from the potable tap. Something lofted from the floor to the countertop and head-butted her arm, purring madly. It was a last-year's-generation parrot-cat, a hyacinth-blue puffball on sun-yellow paws rimmed round the edges with brownish stains. It had a matching tuxedo ruff and goatee and piercing golden eyes that caught and concentrated the filtered sunlight.

"Now, are you supposed to be on the counter?"

"Miaow," the cat said, cocking its head inquisitively. It didn't budge.

Indrapramit was at Ferron's elbow. "Doesn't it talk?"

"Hey, Puss," Ferron said. "What's your name?"

It sat down, balanced neatly on the rail between sink and counter-edge, and flipped its blue fluffy tail over its feet. Its purr vibrated its whiskers and the long hairs of its ruff. Ferron offered it a bit of kibble, and it accepted ceremoniously.

"Must be new," Indrapramit said. "Though you'd expect an adult to have learned to talk in the cattery."

"Not new." Ferron offered a fingertip to the engineered animal. It squeezed its eyes at her and deliberately wiped first one side of its muzzle against her areactin glove, and then the other. "Did you see the cat hair on the lounge?"

Indrapramit paused, considering. "Wiped."

"Our only witness. And she has amnesia." She turned to Indrapramit. "We need to find out who Coffin was expecting. Pull transit records. And I want a five-hour phone track log of every individual who came within fifty meters of this flat between twenty hundred yesterday and when Patrol broke down the doors. Let's get some technical people in to figure out what that pile of gear in the corner is. And who called in the welfare check?"

"Not a lot of help there, boss." Indrapramit's gold-tinted irises flick-scrolled over data—the Constable was picking up a feed skinned over immediate perceptions. Ferron wanted to issue a mild reprimand for inattention to the scene, but it seemed churlish when Indrapramit was following orders. "When he didn't come online this morning for work, his supervisor became concerned. The supervisor was unable to raise him by voice or text. He contacted the flat's minder, and when it reported no response to repeated queries, he called for help."

Ferron contemplated the shattered edges of the smashed-in door before returning her attention to the corpse. "I know the door was locked out on emergency mode. Patrol's override didn't work?"

Indrapramit had one of the more deadpan expressions among the deadpan-trained and certified officers of the Bengaluru City Police. "Evidently."

"Well, while you're online, have them bring in a carrier for the witness." She indicated the hyacinth parrot-cat. "I'll take custody of her."

"How do you know it's a her?"

"She has a feminine face. Lotus eyes like Draupadi."

He looked at her.

She grinned. "I'm guessing."

Ferron had turned off all her skins and feeds while examining the crime scene, but the police link was permanent. An icon blinked discreetly in one corner of her interface, its yellow glow unappealing beside the salmon and coral of Coffin's taut-stretched innards. Accepting the contact was just a matter of an eye-flick. There was a decoding shimmer and one side of the interface spawned an image of Coffin in life.

Coffin had not been a visually vivid individual. Unaffected, Ferron thought, unless dressing one's self in sensible medium-pale brown skin and dark hair with classically Brahmin features counted as an affectation. That handle—*Dexter Coffin*, and wouldn't *Sinister Coffin* be a more logical choice?—seemed to indicate a more flamboyant personality. Ferron made a note of that: out of such small inconsistencies did a homicide case grow.

"So how does one get from this"—Ferron gestured to the image, which should be floating in Indrapramit's interface as well—"to that?"—the corpse on the rug. "In a locked room, no less?"

Indrapramit shrugged. He seemed comfortable enough in the presence of the body, and Ferron wished she could stop examining him for signs of stress. Maybe his right-minding was working. It wasn't too much to hope for, and good treatments for post-traumatic stress had been in development since the Naughties.

But Indrapramit was a relocant: all his family was in a village somewhere up near Mumbai. He had no people here, and so Ferron felt it was her responsibility as his partner to look out for him. At least, that was what she told herself.

He said, "He swallowed a black hole?"

"I like living in the future." Ferron picked at the edge of an areactin glove. "So many interesting ways to die."

Ferron and Indrapramit left the aptblock through the crowds of Coffin's neighbors. It was a block of unrelateds. Apparently Coffin had no family in Bengaluru, but it nevertheless seemed as if every (living) resident had heard the news and come down. The common areas were clogged with grans and youngers, sibs and parents and cousins—all wailing grief, trickling tears, leaning on each other, being interviewed by newsies and blogbots. Ferron took one look at the press in the living area and on the street beyond and juggled the cat carrier into her left hand. She slapped a stripped-off palm against the courtyard door. It swung open—you couldn't lock somebody in—and Ferron and Indrapramit stepped out into the shade of the household sunfarm.

The trees were old. This block had been here a long time; long enough that the sunfollowing black vanes of the lower leaves were as long as Ferron's arm. Someone in the block maintained them carefully, too—they were polished clean with soft cloth, no clogging particles allowed to remain. Condensation trickled down the clear tubules in their trunks to pool in underground catchpots.

Ferron leaned back against a trunk, basking in the cool, and yawned.

"You okay, boss?"

"Tired," Ferron said. "If we hadn't caught the homicide—if it is a homicide—I'd be on a crash cycle now. I had to re-up, and there'll be hell to pay once it wears off."

"Boss—"

"It's only my second forty-eight hours," Ferron said, dismissing Indrapramit's concern with a ripple of her fingers. Gold rings glinted, but not on her wedding finger. Her short nails were manicured in an attempt to look professional, a reminder not to bite. "I'd go hypomanic for weeks at a time at University. Helps you cram, you know."

Indrapramit nodded. He didn't look happy.

The Sub-Inspector shook the residue of the areactin from her hands before rubbing tired eyes with numb fingers. Feeds jittered until the movement resolved. Mail was piling up—press requests, paperwork. There was no time to deal with it now.

"Anyway," Ferron said. "I've already reupped, so you're stuck with me for another forty at least. Where do you think we start?"

"Interview lists," Indrapramit said promptly. Climbing figs hung with ripe fruit twined the sunfarm; gently, the Senior Constable reached up and plucked one. When it popped between his teeth, its intense gritty sweetness echoed through the interface. It was a good fig.

Ferron reached up and stole one too.

"Miaow?" said the cat.

"Hush." Ferron slicked tendrils of hair bent on escaping her conservative bun off her sweating temples. "I don't know how you can wear those boots."

"State of the art materials," he said. Chewing a second fig, he jerked his chin at her practical sandals. "Chappals when you might have to run through broken glass or kick down a door?"

She let it slide into silence. "Junior grade can handle the family for now. It's bulk interviews. I'll take Chairman Miaow here to the tech and get her scanned. Wait, Coffin was Employed. Doing what, and by whom?"

"Physicist," Indrapramit said, linking a list of coworker and project names, a brief description of the biotech firm Coffin had worked for, like half of Employed Bengaluru.

ru ever since the medical tourism days. It was probably a better job than homicide cop. "Distributed. Most of his work group aren't even in this time zone."

"What does BioShell need with physicists?"

Silently, Indrapramit pointed up at the vanes of the suntrees, clinking faintly in their infinitesimal movements as they tracked the sun. "Quantum bioengineer," he explained, after a suitable pause.

"Right," Ferron said. "Well, Forensic will want us out from underfoot while they process the scene. I guess we can start drawing up interview lists."

"Interview lists and lunch?" Indrapramit asked hopefully.

Ferron refrained from pointing out that they had just come out of an apt with an inside-out stiff in it. "Masala dosa?"

Indrapramit grinned. "I saw an SLV down the street."

"I'll call our tech," Ferron said. "Let's see if we can sneak out the service entrance and dodge the press."

Ferron and Indrapramit (and the cat) made their way to the back gate. Indrapramit checked the security cameras on the alley behind the block: his feed said it was deserted except for a waste management vehicle. But as Ferron presented her warrant card—encoded in cloud, accessible through the Omni she wore on her left hip to balance the stun pistol—the energy-efficient safety lights ringing the doorway faded from cool white to a smoldering yellow, and then cut out entirely.

"Bugger," Ferron said. "Power cut."

"How, in a block with a sunfarm?"

"Loose connection?" she asked, rattling the door against the bolt just in case it had flipped back before the juice died. The cat protested. Gently, Ferron set the carrier down, out of the way. Then she kicked the door in frustration and jerked her foot back, cursing. Chappals, indeed.

Indrapramit regarded her mildly. "You shouldn't have re-upped."

She arched an eyebrow at him and put her foot down on the floor gingerly. The toes protested. "You suggesting I should modulate my stress response, Constable?"

"As long as you're adjusting your biochemistry . . ."

She sighed. "It's not work," she said. "It's my mother. She's gone Atavistic, and—"

"Ah," Indrapramit said. "Spending your inheritance on virtual life?"

Ferron turned her face away. WORSE, she texted. SHE'S NOT GOING TO BE ABLE TO PAY HER ARCHIVING FEES.

—ISN'T SHE ON ASSISTANCE? SHOULDN'T THE DOLE COVER THAT?

—YEAH, BUT SHE LIVES IN A.R. SHE'S ALWAYS BEEN A GAMER, BUT SINCE FATHER DIED. . . . IT'S AN ADDICTION. SHE ARCHIVES EVERYTHING. AND HAS SINCE I WAS A CHILD. WE'RE TALKING TERABYTES. PETABYTES. YOTTABYTES. I DON'T KNOW. AND SHE'S AFTER ME TO "BORROW" THE MONEY.

"Oof," he said. "That's a tough one." Briefly, his hand brushed her arm: sympathy and human warmth.

She leaned into it before she pulled away. She didn't tell him that she'd been paying those bills for the past eighteen months, and it was getting to the point where she couldn't support her mother's habit any more. She knew what she had to do. She just didn't know how to make herself do it.

Her mother was her mother. She'd built everything about Ferron, from the DNA up. The programming to honor and obey ran deep. Duty. Felicity. Whatever you wanted to call it.

In frustration, unable to find the words for what she needed to explain properly, she said, "I need to get one of those black market DNA patches and reprogram my overengineered genes away from filial devotion."

He laughed, as she had meant. "You can do that legally in Russia."

"Gee," she said. "You're a help. Hey, what if we—" Before she could finish her suggestion that they slip the lock, the lights glimmered on again and the door, finally registering her override, clicked.

"There," Indrapramit said. "Could have been worse."

"Miaow," said the cat.

"Don't worry, Chairman," Ferron answered. "I wasn't going to forget you."

The street hummed: autorickshaws, glidecycles, bikes, pedestrians, and swarms of foot traffic. The babble of languages: Kannada, Hindi, English, Chinese, Japanese. Coffin's aptblock was in one of the older parts of the New City. It was an American ghetto: most of the residents had come here for work, and spoke English as a primary—sometimes an only—language. In the absence of family to stay with, they had banded together. Coffin's address had once been trendy and now, fifty years after its conversion, had fallen on—not hard times, exactly, but a period of more moderate means. The street still remembered better days. It was bulwarked on both sides by the shaggy green cubes of aptblocks, black suntrees growing through their centers, but what lined each avenue were the feathery cassia trees, their branches dripping pink, golden, and terra-cotta blossoms.

Cassia, Ferron thought. A Greek word of uncertain antecedents, possibly related to the English word *Cassia*, meaning Chinese or mainland cinnamon. But these trees were not spices; indeed, the black pods of the golden cassia were a potent medicine in Ayurvedic traditions, and those of the rose cassia had been used since ancient times as a purgative for horses.

Ferron wiped sweat from her forehead again, and—speaking of horses—reined in the overly helpful commentary of her classical education.

The wall- and roofgardens of the aptblocks demonstrated a great deal about who lived there. The Coffin kinblock was well-tended, green and lush, dripping with brinjal and tomatoes. A couple of youngers—probably still in schooling, even if they weren't Employment track—clambered up and down ladders weeding and feeding and harvesting, and cleaning the windows shaded here and there by the long green trail of sweet potato vines. But the next kinship block down was sere enough to draw a fine, the suntrees in its court sagging and miserable-looking. Ferron could make out the narrow tubes of drip irrigators behind crisping foliage on the near wall.

Ferron must have snorted, because Indrapramit said, "What are they doing with their greywater, then?"

"Maybe it's abandoned?" Unlikely. Housing in the New City wasn't exactly so plentiful that an empty block would remain empty for long.

"Maybe they can't afford the plumber."

That made Ferron snort again, and start walking. But she snapped an image of the dying aptblock nonetheless, and emailed it to Environmental Services. They'd handle the ticket, if they decided the case warranted one.

The Sri Lakshmi Venkateshwara—SLV—was about a hundred meters on, an open-air food stand shaded by a grove of engineered neem trees, their panel leaves angling to follow the sun. Hunger hadn't managed to penetrate Ferron's re-upped hypomania yet, but it would be a good idea to eat anyway: the brain might not be in any shape to notice that the body needed maintenance, but failing to provide that maintenance just added extra interest to the bill when it eventually came due.

Ferron ordered an enormous, potato-and-pea stuffed crepe against Indrapramit's packet of samosas, plus green coconut water. Disdaining the SLV's stand-up tables, they ventured a little farther along the avenue until they found a bench to eat on.

News and ads flickered across the screen on its back. Ferron set the cat carrier on the seat between them.

Indrapramit dropped a somebody-else's-problem skin around them for privacy and unwrapped his first samosa. Flocks of green and yellow parrots wheeled in the trees nearby; the boldest dozen fluttered down to hop and scuffle where the crumbs might fall. You couldn't skin yourself out of the perceptions of the unwired world.

Indrapramit raised his voice to be heard over their arguments. "You shouldn't have re-upped."

The dosa was good—as crisp as she wanted, served with a smear of red curry. Ferron ate most of it, meanwhile grab-and-pasting names off Coffin's known associates lists onto an interfaced interview plan, before answering.

"Most homicides are closed—if they get closed—in the first forty-eight hours. It's worth a little hypomania binge to find Coffin's killer."

"There's more than one murder every two days in this city, boss."

"Sure." She had a temper, but this wasn't the time to exercise it. She knew, given her family history, Indrapramit worried secretly that she'd succumb to addiction and abuse of the rightminding chemicals. The remaining bites of the dosa got sent to meet their brethren, peas popping between her teeth. The wrapper went into the recycler beside the bench. "But we don't catch every case that flies through."

Indrapramit tossed wadded-up paper at Ferron's head. Ferron batted it into that recycler too. "No, yaar. Just all of them this week."

The targeted ads bleeding off the bench-back behind Ferron were scientifically designed to attract her attention, which only made them more annoying. Some too-attractive citizen squalled about rightminding programs for geriatrics ("Bring your parents into the modern age!"), and the news—in direct, loud counterpoint—was talking about the latest orbital telescope discoveries: apparently a star some twenty thousand light years away, in the Andromeda galaxy, had suddenly begun exhibiting a flickering pattern that some astronomers considered a possible precursor to a nova event.

The part of her brain that automatically built such parallels said: *Andromeda. Contained within the span of Uttara Bhadrapada. The twenty-sixth nakshatra in Hindu astronomy, although she was not a sign of the Zodiac to the Greeks.* Pegasus was also in Uttara Bhadrapada. Ferron devoted a few more cycles to wondering if there was any relationship other than coincidental between the legendary serpent Ahir Budhnya, the deity of Uttara Bhadrapada, and the sea monster Cetus, set to eat—devour, the Greeks were so melodramatic—the chained Andromeda.

The whole thing fell under the influence of the god Aryaman, whose path was the Milky Way—the Heavenly Ganges.

You're overqualified, madam. Oh, she could have been the professor, the academic her mother had dreamed of making her, in all those long hours spent in virtual reproductions of myths the world around. She could have been. But if she'd really wanted to make her mother happy, she would have pursued Egyptology, too.

But she wasn't, and it was time she got her mind back on the job she *did* have.

Ferron flicked on the feeds she'd shut off to attend the crime scene. She didn't like to skin on the job: a homicide cop's work depended heavily on unfiltered perceptions, and if you trimmed everything and everyone irritating or disagreeable out of reality, the odds were pretty good that you'd miss the truth behind a crime. But sometimes you had to make an exception.

She linked up, turned up her spam filters and ad blockers, and sorted more Known Associates files. Speaking of her mother, that required ignoring all those lion-headed message-waiting icons blinking in a corner of her feed—and the pileup of news and personal messages in her assimilator.

Lions. Bengaluru's state capitol was topped with a statue of a four-headed lion,

guarding each of the cardinal directions. The ancient symbol of India was part of why Ferron's mother chose that symbolism. But only part.

She set the messages to *hide*, squirming with guilt as she did, and concentrated on the work-related mail.

When she looked up, Indrapramit appeared to have finished both his sorting and his samosas. "All right, what have you got?"

"Just this." She dumped the interview files to his headspace.

The Senior Constable blinked upon receipt. "Ugh. That's even more than I thought."

First on Ferron's interview list were the dead man's coworkers, based on the simple logic that if anybody knew how to turn somebody inside out, it was likely to be another physicist. Indrapramit went back to the aptblock to continue interviewing more-or-less hysterical neighbors in a quest for the name of any potential lover or assignation from the night before.

It was the task least likely to be any fun. But then, Ferron was the senior officer. Rank hath its privileges. Someday, Indrapramit would be making junior colleagues follow up horrible gutwork.

The bus, it turned out, ran right from the corner where Coffin's kinblock's street intercepted the main road. Proximity made her choose it over the mag-lev Metro, but she soon regretted her decision, because it then wound in a drunken pattern through what seemed like the majority of Bengaluru.

She was lucky enough to find a seat—it wasn't a crowded hour. She registered her position with Dispatch and settled down to wait and talk to the hyacinth cat, since it was more than sunny enough that no-one needed to pedal. She waited it out for the transfer point anyway: *that* bus ran straight to the U District, where BioShell had its offices.

Predictable. Handy for head-hunting, and an easy walk for any BioShell employee who might also teach classes. As it seemed, by the number of Professor So-and-sos on Ferron's list, that many of them did.

Her tech, a short wide-bellied man who went by the handle Ravindra, caught up with her while she was still leaned against the second bus's warm, tinted window. He hopped up the steps two at a time, belying his bulk, and shooed a citizen out of the seat beside Ferron with his investigator's card.

Unlike peace officers, who had long since been spun out as distributed employees, techs performed their functions amid the equipment and resources of a centralized lab. But today, Ravindra had come equipped for fieldwork. He stood, steadyng himself on the grab bar, and spread his kit out on the now-unoccupied aisle seat while Ferron coaxed the cat from her carrier under the seat.

"Good puss," Ravindra said, riffling soft fur until he found the contact point behind the animal's ears. His probe made a soft, satisfied beep as he connected it. The cat relaxed bonelessly, purring. "You want a complete download?"

"Whatever you can get," Ferron said. "It looks like she's been wiped. She won't talk, anyway."

"Could be trauma, boss," Ravindra said dubiously. "Oh, DNA results are back. That's your inside-out vic, all right. The autopsy was just getting started when I left, and Doc said to tell you that to a first approximation, it looked like all the bits were there, albeit not necessarily in the proper sequence."

"Well, that's a relief." The bus lurched. "At least it's the correct dead guy."

"Miaow," said the cat.

"What is your name, puss?" Ravindra asked.

"Chairman Miaow," the cat said, in a sweet doll's voice.

"Oh, no," Ferron said. "That's just what I've been calling her."

"Huh." Ravindra frowned at the readouts that must be scrolling across his feed. "Did you feed her, boss?"

"Yeah," Ferron said. "To get her out from under the couch."

He nodded, and started rolling up his kit. As he disconnected the probe, he said, "I downloaded everything there was. It's not much. And I'll take a tissue sample for further investigation, but I don't think this cat was wiped."

"But there's nothing—"

"I know," he said. "Not wiped. This one's factory-new. And it's bonded to you. Congratulations, Sub-Inspector. I think you have a cat."

"I can't—" she said, and paused. "I already have a fox. My mother's fox, rather. I'm taking care of it for her."

"Mine," the cat said distinctly, rubbing her blue-and-yellow muzzle along Ferron's uniform sleeve, leaving behind a scraping of azure lint.

"I imagine they can learn to cohabitate." He shouldered his kit. "Anyway, it's unlikely Chairman Miaow here will be any use as a witness, but I'll pick over the data anyway and get back to you. It's not even a gig."

"Damn," she said. "I was hoping she'd seen the killer. So even if she's brand-new . . . why hadn't she bonded to Coffin?"

"He hadn't fed her," Ravindra said. "And he hadn't given her a name. She's a sweetie, though." He scratched behind her ears. A funny expression crossed his face. "You know, I've been wondering for ages—how did you wind up choosing to be called *Ferron*?"

"My mother used to say I was stubborn as iron." Ferron managed to keep what she knew would be a pathetically adolescent shrug off her shoulders. "She was fascinated by Egypt, but I studied Classics-Latin, Greek, Sanskrit. Some Chinese stuff. And I liked the name. *Ferrum*, iron. She won't use it. She still uses my cradlename." *Even when I'm paying her bills.*

The lion-face still blinked there, muted but unanswered. In a fit of irritation, Ferron banished it. It wasn't like she would forget to call.

Once she had time, she promised the ghost of her mother.

Ravindra, she realized, was staring at her quizzically. "How did a classicist wind up a murder cop?"

Ferron snorted. "You ever try to find Employment as a classicist?"

Ravindra got off at the next stop. Ferron watched him walk away, whistling for an autorickshaw to take him back to the lab. She scratched Chairman Miaow under the chin and sighed.

In another few minutes, she reached the university district and disembarked, still burdened with cat and carrier. It was a pleasant walk from the stop, despite the heat of the end of the dry season. It was late June, and Ferron wondered what it had been like before the Shift, when the monsoons would have started already, breaking the back of the high temperature.

The walk from the bus took under fifteen minutes, the cat a dozy puddle. A patch of sweat spread against Ferron's summerweight trousers where the carrier bumped softly against her hip. She knew she retraced Coffin's route on those rare days when he might choose to report to the office.

Nearing the Indian Institute of Science, Ferron became aware that clothing styles were shifting—self-consciously Green Earther living fabric and ironic, ill-fitting student antiques predominated. Between the buildings and the statuary of culture heroes—R.K. Narayan, Ratan Tata, stark-white with serene or stern expressions—the streets still swarmed, and would until long after nightfall. A prof-caste wearing a live-cloth salwar kameez strutted past; Ferron was all too aware that the outfit would cost a week's salary for even a fairly high-ranking cop.

The majority of these people were Employed. They wore salwar kameez or suits and they had that purpose in their step—unlike most citizens, who weren't in too much of a hurry to get anywhere, especially in the heat of day. It was easier to move in the University quarter, because traffic flowed with intent. Ferron, accustomed to stepping around window-browsing Supplemented and people out for their mandated exercise, felt stress dropping away as the greenery, trees, and gracious old nineteenth and twentieth century buildings of the campus rose up on every side.

As she walked under the chin of Mohandas Gandhi, Ferron felt the familiar irritation that female police pioneer Kiran Bedi, one of her own personal idols, was not represented among the statuary. There was hijra activist Shabnam Mausi behind a row of well-tended planters, though, which was somewhat satisfying.

Some people found it unsettling to be surrounded by so much brick, poured concrete, and mined stone—the legacy of cooler, more energy-rich times. Ferron knew that the bulk of the university's buildings were more efficient green structures, but those tended to blend into their surroundings. The overwhelming impression was still that of a return to a simpler time: 1870, perhaps, or 1955. Ferron wouldn't have wanted to see the whole city gone this way, but it was good that some of the history had been preserved.

Having bisected campus, Ferron emerged along a prestigious street of much more modern buildings. No vehicles larger than bicycles were allowed here, and the roadbed swarmed with those, people on foot, and pedestrians. Ferron passed a rack of share-bikes and a newly constructed green building, still uninhabited, the leaves of its suntrees narrow, immature, and furled. They'd soon be spread wide, and the structure fully tenanted.

The BioShell office itself was a showpiece on the ground floor of a business block, with a live receptionist visible behind foggy photosynthetic glass walls. *I'd hate a job where you can't pick your nose in case the pedestrians see it.* Of course, Ferron hadn't chosen to be as decorative as the receptionist. A certain stern plainness helped get her job done.

"Hello," Ferron said, as the receptionist smoothed brown hair over a shoulder. "I'm Police Sub-Inspector Ferron. I'm here to see Dr. Rao."

"A moment, madam," the receptionist said, gesturing graciously to a chair.

Ferron set heels together in parade rest and—impassive—waited. It was only a few moments before a shimmer of green flickered across the receptionist's iris.

"First door on the right, madam, and then up the stairs. Do you require a guide?"

"Thank you," Ferron said, glad she hadn't asked about the cat. "I think I can find it."

There was an elevator for the disabled, but the stairs were not much further on. Ferron lugged Chairman Miaow through the fire door at the top and paused a moment to catch her breath. A steady hum came from the nearest room, to which the door stood ajar.

Ferron picked her way across a lush biorug sprinkled with violet and yellow flowers and tapped lightly. A voice rose over the hum. "Namaskar!"

Dr. Rao was a slender, tall man whose eyes were framed in heavy creases. He walked forward at a moderate speed on a treadmill, an old-fashioned keyboard and monitor mounted on a swivel arm before him. As Ferron entered, he pushed the arm aside, but kept walking. An amber light flickered green as the monitor went dark: he was charging batteries now.

"Namaskar," Ferron replied. She tried not to stare too obviously at the walking desk.

She must have failed.

"Part of my rightminding, madam," Rao said with an apologetic shrug. "I've fi-

bromyalgia, and mild exercise helps. You must be the Sub-Inspector. How do you take your mandated exercise? You carry yourself with such confidence."

"I am a practitioner of kalari payat," Ferron said, naming a South Indian martial art. "It's useful in my work."

"Well," he said. "I hope you'll see no need to demonstrate any upon me. Is that a cat?"

"Sorry, saab," Ferron said. "It's work-related. She can wait in the hall if you mind—"

"No, not at all. Actually, I love cats. She can come out, if she's not too scared."

"Oouuuuut!" said Chairman Miaow.

"I guess that settles that." Ferron unzipped the carrier, and the hyacinth parrot-cat sauntered out and leaped up to the treadmill's handrail.

"Niranjana?" Dr. Rao said, in surprise. "Excuse me, madam, but what are you doing with Dr. Coffin's cat?"

"You know this cat?"

"Of course I do." He stopped walking, and scratched the cat under her chin. She stretched her head out like a lazy snake, balanced lightly on four daffodil paws. "She comes here about twice a month."

"New!" the cat disagreed. "Who you?"

"Niranjana, it's Rao. You know me."

"Rrraaao?" she said, cocking her head curiously. Adamantly, she said, "New! My name Chairman Miaow!"

Dr. Rao's forehead wrinkled. To Ferron, over the cat's head, he said, "Is Dexter with you? Is he all right?"

"I'm afraid that's why I'm here," Ferron said. "It is my regretful duty to inform you that Dexter Coffin appears to have been murdered in his home sometime over the night. Saab, law requires that I inform you that this conversation is being recorded. Anything you say may be entered in evidence. You have the right to skin your responses or withhold information, but if you choose to do so, under certain circumstances a court order may be obtained to download and decode associated cloud memories. Do you understand this caution?"

"Oh dear," Dr. Rao said. "When I called the police, I didn't expect—"

"I know," Ferron said. "But do you understand the caution, saab?"

"I do," he said. A yellow peripheral node in Ferron's visual field went green.

She said, "Do you confirm this is his cat?"

"I'd know her anywhere," Dr. Rao said. "The markings are very distinctive. Dexter brought her in quite often. She's been wiped? How awful."

"We're investigating," Ferron said, relieved to be back in control of the conversation. "I'm afraid I'll need details of what Coffin was working on, his contacts, any romantic entanglements, any professional rivalries or enemies—"

"Of course," Dr. Rao said. He pulled his interface back around and began typing. "I'll generate a list. As for what he was working on—I'm afraid there are a lot of trade secrets involved, but we're a biomedical engineering firm, as I'm sure you're aware. Dexter's particular project has been applications in four-dimensional engineering."

"I'm afraid," Ferron said, "that means nothing to me."

"Of course." He pressed a key. The cat peered over his shoulder, apparently fascinated by the blinking lights on the monitor.

The hyperlink blinked live in Ferron's feed. She accessed it and received a brief education in the theoretical physics of reaching *around* three-dimensional shapes in space-time. A cold sweat slicked her palms. She told herself it was just the second hypomania re-up.

"Closed-heart surgery," she said. During the medical tourism boom, Bengaluru's economy had thrived. They'd found other ways to make ends meet now that people no longer traveled so profligately, but the state remained one of India's centers of

medical technology. Ferron wondered about the applications for remote surgery, and what the economic impact of this technology could be.

"Sure. Or extracting an appendix without leaving a scar. Inserting stem cells into bone marrow with no surgical trauma, freeing the body to heal disease instead of infection and wounds. It's revolutionary. If we can get it working."

"Saab . . ." She stroked Chairman Miaow's sleek azure head. "Could it be used as a weapon?"

"Anything can be used as a weapon," he said. A little too fast? But his skin conductivity and heart rate revealed no deception, no withholding. "Look, Sub-Inspector. Would you like some coffee?"

"I'd love some," she admitted.

He tapped a few more keys and stepped down from the treadmill. She'd have thought the typing curiously inefficient, but he certainly seemed to get things done fast.

"Religious reasons, saab?" she asked.

"Hmm?" He glanced at the monitor. "No. I'm just an eccentric. I prefer one information stream at a time. And I like to come here and do my work, and keep my home at home."

"Oh." Ferron laughed, following him across the office to a set of antique lacquered chairs. Chairman Miaow minced after them, stopping to sniff the unfamiliar rug and roll in a particularly lush patch. Feeling like she was making a huge confession, Ferron said, "I turn off my feeds sometimes too. Skin out. It helps me concentrate."

He winked.

She said, "So tell me about Dexter and his cat."

"Well . . ." He glanced guiltily at Chairman Miaow. "She was very advanced. He obviously spent a great deal of time working with her. Complete sentences, conversation on about the level of an imaginative five-year old. That's one of our designs, by the way."

"Parrot-cats?"

"The hyacinth variety. We're working on an *Eclectus* variant for next year's market. Crimson and plum colors. You know they have a much longer lifespan than the root stock? Parrot-cats should be able to live for thirty to fifty years, though of course the design hasn't been around long enough for experimental proof."

"I did not. About Dr. Coffin—" she paused, and scanned the lists of enemies and contacts that Dr. Rao had provided, cross-referencing it with files and the reports of three interviews that had come in from Indrapramit in the last five minutes. Another contact request from her mother blinked away officially. She dismissed it. "I understand he wasn't born here?"

"He traveled," Dr. Rao said in hushed tones. "From America."

"Huh," Ferron said. "He relocated for a job? Medieval. How did BioShell justify the expense—and the carbon burden?"

"A unique skill set. We bring in people from many places, actually. He was well-liked here: his work was outstanding, and he was charming enough—and talented enough—that his colleagues forgave him some of the . . . vagaries in his rightminding."

"Vagaries. . . ?"

"He was a depressive, madam," Dr. Rao said. "Prone to fairly serious fits of existential despair. Medication and surgery controlled it adequately that he was functional, but not completely enough that he was always . . . comfortable."

"When you say existential despair. . . ?" Ferron was a past master of the open-ended hesitation.

Dr. Rao seemed cheerfully willing to fill in the blank for her. "He questioned the worth and value of pretty much every human endeavor. Of existence itself."

"So he was a sociopath? A bit nihilistic?"

"Nihilism denies value. Dexter was willing to believe that compassion had value—not intrinsic value, you understand. But assigned value. He believed that the best thing a human being could aspire to was to limit suffering."

"That explains his handle."

Dr. Rao chuckled. "It does, doesn't it? Anyway, he was brilliant."

"I assume that means that BioShell will suffer in his absence."

"The fourth-dimension project is going to fall apart without him," Dr. Rao said candidly. "It's going to take a global search to replace him. And we'll have to do it quickly; release of the technology was on the anvil."

Ferron thought about the inside-out person in the midst of his rug, his flat set for an intimate dinner for two. "Dr. Rao . . ."

"Yes, Sub-Inspector?"

"In your estimation, would Dr. Coffin commit suicide?"

He steeped his fingers and sighed. "It's . . . possible. But he was very devoted to his work, and his psych evaluations did not indicate it as an immediate danger. I'd hate to think that it was."

"Because you'd feel like you should have done more? You can't save somebody from themselves, Dr. Rao."

"Sometimes," he said, "a word in the dark is all it takes."

"Dr. Coffin worked from home. Was any of his lab equipment there? Is it possible that he died in an accident?"

Dr. Rao's eyebrows rose. "Now I'm curious about the nature of his demise, I'm afraid. He should not have had any proprietary equipment at home: we maintain a lab for him here, and his work at home should have been limited to theory and analysis. But of course he'd have an array of interfaces."

The coffee arrived, brought in by a young man with a ready smile who set the tray on the table and vanished again without a word. No doubt pleased to be Employed.

As Dr. Rao poured from a solid old stoneware carafe, he transitioned to small talk. "Some exciting news about the Andromeda galaxy, isn't it? They've named the star Al-Rahman."

"I thought stars were named by coordinates and catalogue number these days."

"They are," Rao said. "But it's fitting for this one to have a little romance. People being what they are, someone would have named it if the science community didn't. And Abd Al-Rahman Al-Sufi was the first astronomer to describe the Andromeda galaxy, around 960 A.D. He called it the 'little cloud.' It's also called Messier 31—"

"Do you think it's a nova precursor, saab?"

He handed her the coffee—something that smelled pricy and rich, probably from the hills—and offered cream and sugar. She added a lump of the latter to her cup with the tongs, stirred in cream, and selected a lemon biscuit from the little plate he nudged toward her.

"That's what they said on the news," he said.

"Meaning you don't believe it?"

"You're sharp," he said admiringly.

"I'm a homicide investigator," she said.

He reached into his pocket and withdrew a small injection kit. The hypo hissed alarmingly as he pressed it to his skin. He winced.

"Insulin?" she asked, restraining herself from an incredibly rude question about why he hadn't had stem cells, if he was diabetic.

He shook his head. "Scotophobin. Also part of my rightminding. I have short-term memory issues." He picked up a chocolate biscuit and bit into it decisively.

She'd taken the stuff herself, in school and when cramming for her police exams. She also refused to be derailed. "So you don't think this star—"

"Al-Rahman."

"—Al-Rahman. You don't think it's going nova?"

"Oh, it might be," he said. "But what would you say if I told you that its pattern is a repeating series of prime numbers?"

The sharp tartness of lemon shortbread turned to so much grit in her mouth. "I beg your pardon."

"Someone is signaling us," Dr. Rao said. "Or I should say, *was* signaling us. A long, long time ago. Somebody with the technology necessary to tune the output of their star."

"Explain," she said, setting the remainder of the biscuit on her saucer.

"Al-Rahman is more than two and a half million light years away. That means that the light we're seeing from it was modulated when the first identifiable humans were budding off the hominid family tree. Even if we could send a signal back . . . The odds are very good that they're all gone now. It was just a message in a bottle. *We were here.*"

"The news said twenty thousand light years."

"The news." He scoffed. "Do they ever get police work right?"

"Never," Ferron said fervently.

"Science either." He glanced up as the lights dimmed. "Another brownout."

An unformed idea tickled the back of Ferron's mind. "Do you have a sunfarm?"

"BioShell is entirely self-sufficient," he confirmed. "It's got to be a bug, but we haven't located it yet. Anyway, it will be back up in a minute. All our important equipment has dedicated power supplies."

He finished his biscuit and stirred the coffee thoughtfully while he chewed. "The odds are that the universe is—or has been—full of intelligent species. And that we will never meet any of them. Because the distances and time scales are so vast. In the two hundred years we've been capable of sending signals into space—well. Compare that in scale to Al-Rahman."

"That's awful," Ferron said. "It makes me appreciate Dr. Coffin's perspective."

"It's terrible," Dr. Rao agreed. "Terrible and wonderful. In some ways I wonder if that's as close as we'll ever get to comprehending the face of God."

They sipped their coffee in contemplation, facing one another across the tray and the low lacquered table.

"Milk?" said Chairman Miaow. Carefully, Ferron poured some into a saucer and gave it to her.

Dr. Rao said, "You know, the Andromeda galaxy and our own Milky Way are expected to collide eventually."

"Eventually?"

He smiled. It did good things for the creases around his eyes. "Four and a half billion years or so."

Ferron thought about Uttara Bhadrapada, and the Heavenly Ganges, and Aryaman's house—in a metaphysical sort of sense—as he came to walk that path across the sky. From so far away it took two and a half million years just to *see* that far.

"I won't wait up, then." She finished the last swallow of coffee and looked around for the cat. "I don't suppose I could see Dr. Coffin's lab before I go?"

"Oh," said Dr. Rao. "I think we can do that, and better."

The lab space Coffin had shared with three other researchers belied BioShell's corporate wealth. It was a maze of tables and unidentifiable equipment in dizzying array. Ferron identified a gene sequencer, four or five microscopes, and a centrifuge, but most of the rest baffled her limited knowledge of bioengineering. She was struck by the fact that just about every object in the room was dressed in BioShell's livery colors of emerald and gold.

She glimpsed a conservatory through a connecting door, lush with what must be prototype plants; at the far end of the room, rows of condensers hummed beside a revolving door rimed with frost. A black-skinned woman in a lab coat with her hair clipped into short, tight curls had her eyes to a lens and her hands in waldo sleeves. Microsurgery?

Dr. Rao held out a hand as Ferron paused beside him. "Will we disturb her?"

"Dr. Nnebuogor will have skinned out just about everything except the fire alarm," Dr. Rao said. "The only way to distract her would be to go over and give her a shove. Which"—he raised a warning finger—"I would recommend against, as she's probably engaged in work on those next-generation parrot-cats I told you about now."

"Nnebuogor? She's Nigerian?"

Dr. Rao nodded. "Educated in Cairo and Bengaluru. Her coming to work for BioShell was a real coup for us."

"You *do* employ a lot of farang," Ferron said. "And not by telepresence." She waited for Rao to bridle, but she must have gotten the tone right, because he shrugged.

"Our researchers need access to our lab."

"Miaow," said Chairman Miaow.

"Can she?" Ferron asked.

"We're cat-friendly," Rao said, with a flicker of a smile, so Ferron set the carrier down and opened its door. Rao's heart rate was up a little, and she caught herself watching sideways while he straightened his trousers and picked lint from his sleeve.

Chairman Miaow emerged slowly, rubbing her length against the side of the carrier. She gazed up at the equipment and furniture with unblinking eyes and soon she gathered herself to leap onto a workbench, and Dr. Rao put a hand out firmly.

"No climbing or jumping," he said. "Dangerous. It will hurt you."

"Hurt?" The cat drew out the Rs in a manner so adorable it had to be engineered for. "No jump?"

"No." Rao turned to Ferron. "We've hardwired in response to the No command. I think you'll find our parrot-cats superior to unengineered felines in this regard. Of course . . . they're still cats."

"Of course," Ferron said. She watched as Chairman Miaow explored her new environment, rubbing her face on this and that. "Do you have any pets?"

"We often take home the successful prototypes," he said. "It would be a pity to destroy them. I have a parrot-cat—a red-and-gray—and a golden lemur. Engineered, of course. The baseline ones are protected."

As they watched, the hyacinth cat picked her way around, sniffing every surface. She paused before one workstation in particular before cheek-marking it, and said in comically exaggerated surprise: "Mine! My smell."

There was a synthetic-fleece-lined basket tucked beneath the table. The cat leaned toward it, stretching her head and neck, and sniffed deeply and repeatedly.

"Have you been here before?" Ferron asked.

Chairman Miaow looked at Ferron wide-eyed with amazement at Ferron's patent ignorance, and declared "New!"

She jumped into the basket and snuggled in, sinking her claws deeply and repeatedly into the fleece.

Ferron made herself stop chewing her thumbnail. She stuck her hand into her uniform pocket. "Are all your hyacinths clones?"

"They're all closely related," Dr. Rao said. "But no, not clones. And even if she were a clone, there would be differences in the expression of her tuxedo pattern."

At that moment, Dr. Nnebuogor sighed and backed away from her machine, withdrawing her hands from the sleeves and shaking out the fingers like a musician after practicing. She jumped when she turned and saw them. "Oh! Sorry. I was skinned. Namaskar."

"Miaow?" said the cat in her appropriated basket.

"Hello, Niranjana. Where's Dexter?" said Dr. Nnebuogor. Ferron felt the scientist reading her meta-tags. Dr. Nnebuogor raised her eyes to Rao. "And—pardon, officer—what's with the copper?"

"Actually," Ferron said, "I have some bad news for you. It appears that Dexter Coffin was murdered last night."

"Murdered . . ." Dr. Nnebuogor put her hand out against the table edge. "*Murdered?*"

"Yes," Ferron said. "I'm Police Sub-Inspector Ferron." Which Dr. Nnebuogor would know already. "And I'm afraid I need to ask you some questions. Also, I'll be contacting the other researchers who share your facilities via telepresence. Is there a private area I can use for that?"

Dr. Nnebuogor looked stricken. The hand that was not leaned against the table went up to her mouth. Ferron's feed showed the acceleration of her heart, the increase in skin conductivity as her body slicked with cold sweat. Guilt or grief? It was too soon to tell.

"You can use my office," Dr. Rao said. "Kindly, with my gratitude."

The interviews took the best part of the day and evening, when all was said and done, and garnered Ferron very little new information—yes, people *would* probably kill for what Coffin was—had been—working on. No, none of his colleagues had any reason to. No, he had no love life of which they were aware.

Ferron supposed she technically *could* spend all night lugging the cat carrier around, but her own flat wasn't too far from the University district. It was in a kinship block teeming with her uncles and cousins, her grandparents, great-grandparents, her sisters and their husbands (and in one case, wife). The fiscal support of shared housing was the only reason she'd been able to carry her mother as long as she had.

She checked out a pedestrian because she couldn't face the bus and she felt like she'd done more than her quota of steps before dinnertime—and here it was, well after. The cat carrier balanced on the grab bar, she zipped it unerringly through the traffic, enjoying the feel of the wind in her hair and the outraged honks cascading along the double avenues.

She could make the drive on autopilot, so she used the other half of her attention to feed facts to the Department's expert system. Doyle knew everything about everything, and if it wasn't self-aware or self-directed in the sense that most people meant when they said *artificial intelligence*, it still rivaled a trained human brain when it came to picking out patterns—and being supercooled, it was significantly faster.

She even told it the puzzling bits, such as how Chairman Miaow had reacted upon being introduced to the communal lab that Coffin shared with three other BioShell researchers.

Doyle swallowed everything Ferron could give it, as fast as she could report. She knew that down in its bowels, it would be integrating that information with Indrapramit's reports, and those of the other officers and techs assigned to the case.

She thought maybe they needed something more. As the pedestrian dropped her at the bottom of her side street, she dropped a line to Damini, her favorite archinformist. "Hey," she said, when Damini answered.

"Hey yourself, boss. What do you need?"

Ferron released the pedestrian back into the city pool. It scurried off, probably already summoned to the next call. Ferron had used her override to requisition it. She tried to feel guilty, but she was already late in attending to her mother—and she'd ignored two more messages in the intervening time. It was probably too late to prevent bloodshed, but there was something to be said for getting the inevitable over with.

"Dig me up everything you can on today's vic, would you? Dexter Coffin, American

by birth, employed at BioShell. As far back as you can, any tracks he may have left under any name or handle."

"Childhood dental records and juvenile posts on the *Candyland* message boards," Damini said cheerfully. "Got it. I'll stick it in Doyle when it's done."

"Ping me, too? Even if it's late? I'm upped."

"So will I be," Damini answered. "This could take a while. Anything else?"

"Not unless you have a cure for families."

"Hah," said the archinformist. "Everybody talking, and nobody hears a damned thing anybody else has to say. I'd retire on the proceeds. All right, check in later." She vanished just as Ferron reached the aptblock lobby.

It was after dinner, but half the family was hanging around in the common areas, watching the news or playing games while pretending to ignore it. Ferron knew it was useless to try sneaking past the synthetic marble-floored chambers with their charpoys and cushions, the corners lush with foliage. Attempted stealth would only encourage them to detain her longer.

Dr. Rao's information about the prime number progression had leaked beyond scientific circles—or been released—and an endless succession of talking heads were analyzing it in less nuanced terms than he'd managed. The older cousins asked Ferron if she'd heard the news about the star; two sisters and an uncle told her that her mother had been looking for her. *All* the nieces and nephews and small cousins wanted to look at the cat.

Ferron's aging mausi gave her five minutes on how a little cosmetic surgery would make her much more attractive on the marriage market, and shouldn't she consider lightening that mahogany-brown skin to a "prettier" wheatish complexion? A plate of idlis and sambhaar appeared as if by magic in mausi's hand, and from there transferred to Ferron's. "And how are you ever going to catch a man if you're so skinny?"

It took Ferron twenty minutes to maneuver into her own small flat, which was still set for sleeping from three nights before. Smoke came trotting to see her, a petite-footed drift of the softest silver-and-charcoal fur imaginable, from which emerged a laughing triangular face set with eyes like black jewels. His ancestors had been foxes farmed for fur in Russia. Researchers had experimented on them, breeding for docility. It turned out it only took a few generations to turn a wild animal into a housepet.

Ferron was a little uneasy with the ethics of all that. But it hadn't stopped her from adopting Smoke when her mother lost interest in him. Foxes weren't the hot trend anymore; the fashion was for engineered cats and lemurs—and skinpets, among those who wanted to look daring.

Having rushed home, she was now possessed by the intense desire to delay the inevitable. She set Chairman Miaow's carrier on top of the cabinets and took Smoke out into the sunfarm for a few minutes of exercise in the relative cool of night. When he'd chased parrots in circles for a bit, she brought him back in, cleaned his litterbox, and stripped off her sweat-stiff uniform to have a shower. She was washing her hair when she realized that she had no idea what to feed Chairman Miaow. Maybe she could eat fox food? Ferron would have to figure out some way to segregate part of the flat for her . . . at least until she was sure that Smoke didn't think a parrot-cat would make a nice midnight snack.

She dressed in off-duty clothes—barefoot in a salwar kameez—and made an attempt at setting her furniture to segregate her flat. Before she left, she placed offering packets of kumkum and a few marigolds from the patio boxes in the tray before her idol of Varuna, the god of agreement, order, and the law.

Ferron didn't bother drying her hair before she presented herself at her mother's door. If she left it down, the heat would see to that soon enough.

Madhuvanthy did not rise to admit Ferron herself, as she was no longer capable. The door just slid open to Ferron's presence. As Ferron stepped inside, she saw mostly that the rug needed watering, and that the chaise her mother reclined on needed to be reset—it was sagging at the edges from too long in one shape. She wore not just the usual noninvasive modern interface—contacts, skin conductivity and brain activity sensors, the invisibly fine wires that lay along the skin and detected nerve impulses and muscle micromovements—but a full immersion suit.

Not for the first time, Ferron contemplated skinning out the thing's bulky, padded outline, and looking at her mother the way she wanted to see her. But that would be dishonest. Ferron was here to face her problems, not pretend their nonexistence.

"Hello, Mother," Ferron said.

There was no answer.

Ferron sent a text message. HELLO, MOTHER. YOU WANTED TO SEE ME?

The pause was long, but not as long as it could have been. YOU'RE LATE, TAMANNA. I'VE BEEN TRYING TO REACH YOU ALL DAY. I'M IN THE MIDDLE OF A RUN RIGHT NOW.

I'M SORRY, Ferron said. SOMEONE WAS MURDERED.

Text, thank all the gods, sucked out the defensive sarcasm that would have filled up a spoken word. She fiddled the bangles she couldn't wear on duty, just to hear the glass chime.

She could feel her mother's attention elsewhere, her distaste at having the unpleasant realities of Ferron's job forced upon her. That attention would focus on anything but Ferron, for as long as Ferron waited for it. It was a contest of wills, and Ferron always lost. MOTHER—

Her mother pushed up the faceplate on the V.R. helmet and sat up abruptly. "Bloody hell," she said. "Got killed. That'll teach me to do two things at once. Look, about the archives—"

"Mother," Ferron said, "I can't. I don't have any more savings to give you."

Madhuvanthy said, "They'll kill me."

They'll de-archive your virtual history, Ferron thought, but she had the sense to hold her tongue.

After her silence dragged on for fifteen seconds or so, Madhuvanthy said, "Sell the fox."

"He's mine," Ferron said. "I'm not selling him. Mother, you really need to come out of your make-believe world once in a while—"

Her mother pulled the collar of the VR suit open so she could ruffle the fur of the violet-and-teal-striped skinket nestled up to the warmth of her throat. It humped in response, probably vibrating with a comforting purr. Ferron tried not to judge, but the idea of parasitic pets, no matter how fluffy and colorful, made her skin crawl.

Ferron's mother said, "Make-believe. And your world isn't?"

"Mother—"

"Come in and see my world sometime before you judge it."

"I've seen your world," Ferron said. "I used to live there, remember? All the time, with you. Now I live out here, and you can too."

Madhuvanthy's glare would have seemed blistering even in the rainy season. "I'm your mother. You will obey me."

Everything inside Ferron demanded she answer yes. Hard-wired, that duty. Planned for. Programmed.

Ferron raised her right hand. "Can't we get some dinner and—"

Madhuvanthy sniffed and closed the faceplate again. And that was the end of the interview.

Rightminding or not, the cool wings of hypomania or not, Ferron's heart was pounding and her fresh clothing felt sticky again already. She turned and left.

When she got back to her own flat, the first thing she noticed was her makeshift wall of furniture partially disassembled, a chair/shelf knocked sideways, the disconnected and overturned table top now fallen flat.

"Oh, no." Her heart rose into her throat. She rushed inside, the door forgotten—

Atop a heap of cushions lay Smoke, proud and smug. And against his soft gray side, his fluffy tail flipped over her like a blanket, curled Chairman Miaow, her golden eyes squeezed closed in pleasure.

"Mine!" she said definitively, raising her head.

"I guess so," Ferron answered. She shut the door and went to pour herself a drink while she started sorting through Indrapramit's latest crop of interviews.

According to everything Indrapramit had learned, Coffin was quiet. He kept to himself, but he was always willing and enthusiastic when it came to discussing his work. His closest companion was the cat—Ferron looked down at Chairman Miaow, who had rearranged herself to take advantage of the warm valley in the bed between Smoke and Ferron's thigh—and the cat was something of a neighborhood celebrity, riding on Coffin's shoulder when he took his exercise.

All in all, a typical portrait of a lonely man who didn't let anyone get too close.

"Maybe there will be more in the archinformation," she said, and went back to Doyle's pattern algorithm results one more damn time.

After performing her evening practice of kalari payat—first time in three days—Ferron set her furniture for bed and retired to it with her files. She wasn't expecting Indrapramit to show up at her flat, but some time around two in the morning, the lobby door discreetly let her know she had a visitor. Of course, he knew she'd upped, and since he had no family and lived in a thin-walled dormitory room, he'd need a quiet place to camp out and work at this hour of the night. There wasn't a lot of productive interviewing you could do when all the subjects were asleep—at least, not until they had somebody dead to rights enough to take them down to the jail for interrogation.

His coming to her home meant every other resident of the block would know, and Ferron could look forward to a morning of being quizzed by aunties while she tried to cram her idlis down. It didn't matter that Indrapramit was a colleague, and she was his superior. At her age, any sign of male interest brought unEmployed relatives with too much time on their hands swarming.

Still, she admitted him. Then she extricated herself from between the fox and the cat, wrapped her bathrobe around herself, stomped into her slippers, and headed out to meet him in the hall. At least keeping their conference to the public areas would limit knowing glances later.

He'd upped too. She could tell by the bounce in his step and his slightly wild focus. And the fact that he was dropping by for a visit in the dark of the morning.

Lowering her voice so she wouldn't trouble her neighbors, Ferron said, "Something too good to mail?"

"An interesting potential complication."

She gestured to the glass doors leading out to the sunfarm. He followed her, his boots somehow still as bright as they'd been that morning. He must polish them in an anti-static gloss.

She kicked off her slippers and padded barefoot over the threshold, making sure to silence the alarm first. The suntrees were furled for the night, their leaves rolled into funnels that channeled condensation to the roots. There was even a bit of chill in the air.

Ferron breathed in gratefully, wiggling her toes in the cultivated earth. "Let's go up to the roof."

Without a word, Indrapramit followed her up the winding openwork stair hung

with bougainvillea, barren and thorny now in the dry season but a riot of color and greenery once the rains returned. The interior walls of the aptblock were mossy and thickly planted with coriander and other Ayurvedic herbs. Ferron broke off a bitter leaf of fenugreek to nibble as they climbed.

At the landing, she stepped aside and tilted her head back, peering up through the potted neem and lemon and mango trees at the stars beyond. A dark hunched shape in the branches of a pomegranate startled her until she realized it was the outline of one of the house monkeys, huddled in sleep. She wondered if she could see the Andromeda galaxy from here at this time of year. Checking a skymap, she learned that it would be visible—but probably low on the horizon, and not without a telescope in these light-polluted times. You'd have better odds of finding it than a hundred years ago, though, when you'd barely have been able to glimpse the brightest stars. The Heavenly Ganges spilled across the darkness like sequins sewn at random on an indigo veil, and a crooked fragment of moon rode high. She breathed in deep and stepped onto the grass and herbs of the roof garden. A creeping mint snagged at her toes, sending its pungency wide.

"So what's the big news?"

"We're not the only ones asking questions about Dexter Coffin." Indrapramit flashed her a video clip of a pale-skinned woman with red hair bleached ginger by the sun and a crop of freckles not even the gloss of sunblock across her cheeks could keep down. She was broad-shouldered and looked capable, and the ID codes running across the feed under her image told Ferron she carried a warrant card and a stun pistol.

"Contract cop?" she said, sympathetically.

"I'm fine," he said, before she could ask. He spread his first two fingers opposite his thumb and pressed each end of the V beneath his collarbones, a new nervous gesture. "I got my Chicago block maintained last week, and the reprogramming is holding. I'd tell you if I was triggering. I know that not every contract cop is going to decompensate and start a massacre."

A massacre Indrapramit had stopped the hard way, it happened. "Let me know what you need," she said, because everything else she could have said would sound like a vote of no confidence.

"Thanks," he said. "How'd it go with your mother?"

"Gah," she said. "I think I need a needle. So what's the contractor asking? And who's employing her?"

"Here's the interesting thing, boss. She's an American too."

"She couldn't have made it here this fast. Not unless she started before he died—"

"No," he said. "She's an expat, a former New York homicide detective. Her handle is Morganti. She lives in Hongasandra, and she does a lot of work for American and Canadian police departments. Licensed and bonded, and she seems to have a very good rep."

"Who's she under contract to now?"

"Warrant card says Honolulu."

"Huh." Ferron kept her eyes on the stars, and the dark leaves blowing before them. "Top-tier distributed policing, then. Is it a skip trace?"

"You think he was on the run, and whoever he was on the run from finally caught up with him?"

"It's a working theory." She shrugged. "Damini's supposed to be calling with some background any minute now. Actually, I think I'll check in with her. She's late, and I have to file a twenty-four-hour report with the Inspector in the morning."

With a twitch of her attention, she spun a bug out to Damini and conferred Indrapramit in.

The archinformist answered immediately. "Sorry, boss," she said. "I know I'm slow,

but I'm still trying to put together a complete picture here. Your dead guy buried his past pretty thoroughly. I can give you a preliminary, though, with the caveat that it's subject to change."

"Squirt," Ferron said, opening her firewall to the data. It came in fast and hard, and there seemed to be kilometers of it unrolling into her feed like an endless bolt of silk. "Oh, dear. . . ."

"I know, I know. Do you want the executive summary? Even if it's also a work in progress? Okay. First up, nobody other than Coffin was in his flat that night, according to netfeed tracking."

"The other night upon the stair," Ferron said, "I met a man who wasn't there."

Damini blew her bangs out of her eyes. "So either nobody came in, or whoever did is a good enough hacker to eradicate every trace of her presence. Which is not a common thing."

"Gotcha. What else?"

"Doyle picked out a partial pattern in your feed. Two power cuts in places associated with the crime. It started looking for more, and it identified a series of brownouts over the course of a year or so, all in locations with some connection to Dr. Coffin. Better yet, Doyle identified the cause."

"I promise I'm holding my breath," Indrapramit said.

"Then how is it you are talking? Anyway, it's a smart virus in the power grids. It's draining power off the lab and household sunfarms at irregular intervals. That power is being routed to a series of chargeable batteries in Coffin's lab space. Except Coffin didn't purchase order the batteries."

"Nnebuogor," Ferron guessed.

"Two points," said Damini. "It's a stretch, but she could have come in to the office today specifically to see if the cops stopped by."

"She could have . . ." Indrapramit said dubiously. "You think she killed him because he found out she was stealing power? For what purpose?"

"I'll get on her email and media," Damini said. "So here's my speculation: imagine this utility virus, spreading through the smart grid from aptblock to aptblock. To commit the murder, nobody had to be in the room with him, not if his four-dimensional manipulators were within range of him. Right? You'd just override whatever safety protocols there were, and . . . boom. Or squish, if you prefer."

Ferron winced. She didn't. Prefer, that was. "Any sign that the manipulators were interfered with?"

"Memory wiped," Damini said. "Just like the cat. Oh, and the other thing I found out. Dexter Coffin is not our boy's first identity. It's more like his third, if my linguistic and semantic parsers are right about the web content they're picking up. I've got Conan on it too"—Conan was another of the department's expert systems—"and I'm going to go over a selection by hand. But it seems like our decedent had reinvented himself whenever he got into professional trouble, which he did a lot. He had unpopular opinions, and he wasn't shy about sharing them with the net. So he'd make the community too hot to handle and then come back as his own sockpuppet—new look, new address, new handle. Severing all ties to what he was before. I've managed to get a real fix on his last identity, though—"

Indrapramit leaned forward, folding his arms against the chill. "How do you do that? He works in a specialized—a rarified field. I'd guess everybody in it knows each other, at least by reputation. Just how much did he change his appearance?"

"Well," Damini said, "he used to look like this. He must have used some right-minding tactics to change elements of his personality, too. Just not the salient ones. A real chameleon, your arsehole."

She picked a still image out of the datastream and flung it up. Ferron glanced at

Indrapramit, whose rakish eyebrows were climbing up his forehead. An East Asian with long, glossy dark hair, who appeared to stand about six inches taller than Dr. Coffin, floated at the center of her perceptions, smiling benevolently.

"Madam, saab," Damini said. "May I present Dr. Jessica Fang."

"Well," Ferron said, after a pause of moderate length. "That takes a significant investment." She thought of Aristotle: As the condition of the mind alters, so too alters the condition of the body, and likewise, as the condition of the body alters, so too alters the condition of the mind.

Indrapramit said, "He has a taste for evocative handles. Any idea why the vanishing act?"

"I'm working on it," Damini said.

"I've got a better idea," said Ferron. "Why don't we ask Detective Morganti?"

Indrapramit steepled his fingers. "Boss...."

"I'll hear it," Ferron said. "It doesn't matter if it's crazy."

"We've been totally sidetracked by the cat issue. Because Chairman Miaow has to be Niranjana, right? Because a clone would have expressed the genes for those markings differently. But she can't be Niranjana, because she's not wiped: she's factory-new."

"Right," Ferron said cautiously.

"So." Indrapramit was enjoying his dramatic moment. "If a person can have cosmetic surgery, why not a parrot-cat?"

"Chairman Miaow?" Ferron called, as she led Indrapramit into her flat. They needed tea to shake off the early morning chill, and she was beyond caring what the neighbors thought. She needed a clean uniform, too.

"Miaow," said Chairman Miaow, from inside the kitchen cupboard.

"Oh, dear." Indrapramit followed Ferron in. Smoke sat demurely in the middle of the floor, tail fluffed over his toes, the picture of innocence. Ferron pulled wide the cabinet door, which already stood ten inches ajar. There was Chairman Miaow, purring, a shredded packet of tunafish spreading dribbles of greasy water across the cupboard floor.

She licked her chops ostentatiously and jumped down to the sink lip, where she balanced as preciously as she had in Coffin's flat.

"Cat," Ferron said. She thought over the next few things she wanted to say, and remembered that she was speaking to a parrot-cat. "Don't think you've gotten away with anything. The fox is getting the rest of that."

"Fox food is icky," the cat said. "Also, not enough taurine."

"Huh," Ferron said. She looked over at Indrapramit.

He looked back. "I guess she's learning to talk."

They had no problem finding Detective Morganti. The redhead American woman arrived at Ferron's aptblock with the first rays of sunlight stroking the vertical farms along its flanks. She had been sitting on the bench beside the door, reading something on her screen, but she looked up and stood as Ferron and Indrapramit exited.

"Sub-Inspector Ferron, I presume? And Constable Indrapramit, how nice to see you again."

Ferron shook her hand. She was even more imposing in person, tall and broad-chested, with the shoulders of a cartoon superhuman. She didn't squeeze.

Morganti continued, "I understand you're the detective of record on the Coffin case."

"Walk with us," Ferron said. "There's a nice French coffee shop on the way to the Metro."

It had shaded awnings and a courtyard, and they were seated and served within

minutes. Ferron amused herself by pushing the crumbs of her pastry around on the plate while they talked. Occasionally, she broke a piece off and tucked it into her mouth, washing buttery flakes down with thick, cardamom-scented brew.

"So," she said after a few moments, "what did Jessica Fang do in Honolulu? It's not just the flame wars, I take it. And there's no warrant for her that we could find."

Morganti's eyebrows rose. "Very efficient."

"Thank you." Ferron tipped her head to Indrapramit. "Mostly his work, and that of my archinformist."

Morganti smiled; Indrapramit nodded silently. Then Morganti said, "She is believed to have been responsible for embezzling almost three million ConDollars from her former employer, eleven years ago in the Hawaiian Islands."

"That'd pay for a lot of identity-changing."

"Indeed."

"But they can't prove it."

"If they could, Honolulu P.D. would have pulled a warrant and virtually extradited her. Him. I was contracted to look into the case ten days ago—" She tore off a piece of a cheese croissant and chewed it thoughtfully. "It took the skip trace this long to locate her. Him."

"Did she do it?"

"Hell yes." She grinned like the American she was. "The question is—well, okay, I realize the murder is your jurisdiction, but I don't get paid unless I either close the case or eliminate my suspect—and I get a bonus if I recover any of the stolen property. Now, 'killed by person or persons unknown' is a perfectly acceptable outcome as far as the City of Honolulu is concerned, with the added benefit that the State of Hawaii doesn't have to pay Bengaluru to incarcerate him. So I need to know, one cop to another, if the inside-out stiff is Dexter Coffin."

"The DNA matches," Ferron said. "I can tell you that in confidence. There will be a press release once we locate and notify his next of kin."

"Understood," Morganti said. "I'll keep it under my hat. I'll be filing recovery paperwork against the dead man's assets in the amount of C\$2,798,000 and change. I can give you the next of kin, by the way."

The data came in a squirt. Daughter, Maui. Dr. Fang-Coffin really had severed all ties.

"Understood," Ferron echoed. She smiled when she caught herself. She liked this woman. "You realize we have to treat you as a suspect, given your financial motive."

"Of course," Morganti said. "I'm bonded, and I'll be happy to come in for an interrogation under Truth."

"That will make things easier, madam," Ferron said.

Morganti turned her coffee cup in its saucer. "Now then. What can I do to help you clear your homicide?"

Indrapramit shifted uncomfortably on the bench.

"What *did* Jessica Fang do, exactly?" Ferron had Damini's data in her case buffer. She could use what Morganti told her to judge the contract officer's knowledge and sincerity.

"In addition to the embezzling? Accused of stealing research and passing it off as her own," Morganti said. "Also, she was—well, she was just kind of an asshole on the net, frankly. Running down colleagues, dismissing their work, aggrandizing her own. She was good, truthfully. But nobody's *that* good."

"Would someone have followed him here for personal reasons?"

"As you may have gathered, this guy was not diligent about his rightminding," Morganti said. She pushed a handful of hair behind her shoulder. "And he was a bit of a narcissist. Sociopath? Antisocial in some sort of atavistic way. Normal people

don't just . . . walk away from all their social connections because they made things a little hot on the net."

Ferron thought of the distributed politics of her own workplace, the sniping and personality clashes. And her mother, not so much alone on an electronic Serengeti as haunting the virtual pillared palaces of an Egypt that never was.

"No," she said.

Morganti said, "Most people find ways to cope with that. Most people don't burn themselves as badly as Jessica Fang did, though."

"I see." Ferron wished badly for sparkling water in place of the syrupy coffee. "You've been running down Coffin's finances, then? Can you share that information?"

Morganti said that Coffin had liquidated a lot of hidden assets a week ago, about two days after she took his case. "It was before I made contact with him, but it's possible he had Jessica Fang flagged for searches—or he had a contact in Honolulu who let him know when the skip trace paid off. He was getting ready to run again. How does that sound?"

Ferron sighed and sat back in her chair. "Fabulous. It sounds completely fabulous. I don't suppose you have any insight into who he might have been expecting for dinner? Or how whoever killed him might have gotten out of the room afterward when it was all locked up tight on Coffin's override?"

Morganti shrugged. "He didn't have any close friends or romantic relationships. Always too aware that he was living in hiding, I'd guess. Sometimes he entertained co-workers, but I've checked with them all, and none admits having seen him that night."

"Sub-Inspector," Indrapramit said gently. "The time."

"Bugger," Ferron said, registering it. "Morning roll call. Catch up with you later?"

"Absolutely," Morganti said. "As I said before, I'm just concerned with clearing my embezzling case. I'm always happy to help a sister officer out on a murder."

And butter up the local police, Ferron thought.

Morganti said, "One thing that won't change. Fang was *obsessed* with astronomy."

"There were deep-space images on Coffin's walls," Ferron said.

Indrapramit said, "And he had offered his Ganesha an indigo scarf. I wonder if the color symbolized something astronomical to him."

"Indigo," Morganti said. "Isn't it funny that we have a separate word for dark blue?"

Ferron felt the pedantry welling up, and couldn't quite stopper it. "Did you know that all over the world, dark blue and black are often named with the same word? Possibly because of the color of the night sky. And that the ancient Greeks did not have a particular name for the color blue? Thus their seas were famously 'wine-dark.' But in Hindu tradition, the color blue has a special significance: it is the color of Vishnu's skin, and Krishna is nicknamed *Sunil*, 'dark blue.' The color also implies that which is all-encompassing, as in the sky."

She thought of something slightly more obscure. "Also, that color is the color of Shani Bhagavan, who is one of the deities associated with Uttara Bhadrapada. Which we've been hearing a lot about lately. It might indeed have had a lot of significance to Dr. Fang-Coffin."

Morganti, eyebrows drawn together in confusion, looked to Indrapramit for salvation. "Saab? Uttara Bhadrapada?"

Indrapramit said, "Andromeda."

Morganti excused herself as Indrapramit and Ferron prepared to check in to their virtual office.

While Ferron organized her files and her report, Indrapramit finished his coffee. "We need to check inbound ships from, or carrying passengers from, America. Honolulu isn't as prohibitive as, say, Chicago."

They'd worked together long enough that half the conversational shifts didn't need to be recorded. "Just in case somebody *did* come here to kill him. Well, there can't be that many passages, right?"

"I'll get Damini after it," he said. "After roll—"

Roll call made her avoidant. There would be reports, politics, wrangling, and a succession of wastes of time as people tried to prove that their cases were more worthy of resources than other cases.

She pinched her temples. At least the coffee here was good. "Right. Telepresencing . . . now."

After the morning meeting, they ordered another round of coffees, and Ferron pulled up the sandwich menu and eyed it. There was no telling when they'd have time for lunch.

She'd grab something after the next of kin notification. If she was still hungry when they were done.

Normally, in the case of a next of kin so geographically distant, Bengaluru Police would arrange for an officer with local jurisdiction to make the call. But the Lahaina Police Department had been unable to raise Jessica Fang's daughter on a home visit, and a little cursory research had revealed that she was unEmployed and very nearly a permanent resident of Artificial Reality.

Just going by her handle, Jessica Fang's daughter on Maui didn't have a lot of professional aspirations. Ferron and Indrapramit had to go virtual and pull on avatars to meet her: Skooter0 didn't seem to come out of her virtual worlds for anything other than biologically unavoidable crash cycles. Since they were on duty, Ferron and Indrapramit's avatars were the standard-issue blanks provided by Bengaluru Police, their virtual uniforms sharply pressed, their virtual faces expressionless and identical.

It wasn't the warm and personal touch you would hope for, Ferron thought, when somebody was coming to tell you your mother had been murdered.

"Why don't you take point on this one?" she said.

Indrapramit snorted. "Be sure to mention my leadership qualities in my next performance review."

They left their bodies holding down those same café chairs and waded through the first few tiers of advertisements—get-rich-quick schemes, Bollywood starlets, and pop star scandal sheets, until they got into the American feed, and then it was get-rich-quick schemes, Hollywood starlets, pornography, and Congressional scandal sheets—until they linked up with the law enforcement priority channel. Ferron checked the address and led Indrapramit into a massively multiplayer artificial reality that showed real-time activity through Skooter0's system identity number. Once provided with the next-of-kin's handle, Damini had sent along a selection of key codes and overrides that got them through the pay wall with ease.

They didn't need a warrant for this. It was just a courtesy call.

Skooter0's preferred hangout was a "historical" AR, which meant in theory that it reflected the pre-twenty-first-century world, and in practice that it was a muddled-up stew of cowboys, ninjas, pinstripe-suit mobsters, Medieval knights, cavaliers, Mongols, and Wild West gunslingers. There were Macedonians, Mauryans, African gunrunners, French resistance fighters, and Nazis, all running around together with samurai and Shaolin monks.

Indrapramit's avatar checked a beacon—a glowing green needle floating just above his nonexistent wrist. The directional signal led them through a space meant to evoke an antediluvian ice cave, in which about two dozen people all dressed as different incarnations of the late-twentieth-century pop star David Bowie were working themselves into a martial frenzy as they prepared to go forth and do virtual bat-

tle with some rival clade of Emulators. Ferron eyed a Diamond Dog who was being dressed in glittering armor by a pair of Thin White Dukes and was glad of the expressionless surface of her uniform avatar.

She knew what they were supposed to be because she pattern-matched from the web. The music was quaint, but pretty good. The costumes . . . she winced.

Well, it was probably a better way to deal with antisocial aggression than taking it out on your spouse.

Indrapramit walked on, eyes front—not that you needed eyes to see what was going on in here.

At the far end of the ice cave, four seventh-century Norse dwarves delved a staircase out of stone, leading endlessly down. Heat rolled up from the depths. The virtual workmanship was astounding. Ferron and Indrapramit moved past, hiding their admiring glances. Just as much skill went into creating AR beauty as if it were stone.

The ice cave gave way to a forest glade floored in mossy, irregular slates. Set about on those were curved, transparent tables set for chess, go, mancala, cribbage, and similar strategy games. Most of the tables were occupied by pairs of players, and some had drawn observers as well.

Indrapramit followed his needle—and Ferron followed Indrapramit—to a table where a unicorn and a sasquatch were playing a game involving rows of transparent red and yellow stones laid out on a grid according to rules that Ferron did not comprehend. The sasquatch looked up as they stopped beside the table. The unicorn—glossy black, with a pearly, shimmering horn and a glowing amber stone pinched between the halves of her cloven hoof—was focused on her next move.

The arrow pointed squarely between her enormous, lambent golden eyes.

Ferron cleared her throat.

"Yes, officers?" the sasquatch said. He scratched the top of his head. The hair was particularly silky, and flowed around his long hooked fingernails.

"I'm afraid we need to speak to your friend," Indrapramit said.

"She's skinning you out," the sasquatch said. "Unless you have a warrant—"

"We have an override," Ferron said, and used it as soon as she felt Indrapramit's assent.

The unicorn's head came up, a shudder running the length of her body and setting her silvery mane to swaying. In a brittle voice, she said, "I'd like to report a glitch."

"It's not a glitch," Indrapramit said. He identified himself and Ferron and said, "Are you Skooter0?"

"Yeah," she said. The horn glittered dangerously. "I haven't broken any laws in India."

The sasquatch stood up discreetly and backed away.

"It is my unfortunate duty," Indrapramit continued, "to inform you of the murder of your mother, Dr. Jessica Fang, a.k.a. Dr. Dexter Coffin."

The unicorn blinked iridescent lashes. "I'm sorry," she said. "You're talking about something I have killfiled. I won't be able to hear you until you stop."

Indrapramit's avatar didn't look at Ferron, but she felt his request for help. She stepped forward and keyed a top-level override. "You will hear us," she said to the unicorn. "I am sorry for the intrusion, but we are legally bound to inform you that your mother, Dr. Jessica Fang, a.k.a. Dr. Dexter Coffin, has been murdered."

The unicorn's lip curled in a snarl. "Good. I'm glad."

Ferron stepped back. It was about the response she had expected.

"She made me," the unicorn said. "That doesn't make her my mother. Is there anything else you're legally bound to inform me of?"

"No," Indrapramit said.

"Then get the hell out." The unicorn set her amber gaming stone down on the grid. A golden glow encompassed it and its neighbors. "I win."

* * *

"Warehoused," Indrapramit said with distaste, back in his own body and nibbling a slice of quiche. "And happy about it."

Ferron had a pressed sandwich of vegetables, tapenade, cheeses, and some elaborate and incomprehensible European charcuterie made of smoked vatted protein. It was delicious, in a totally exotic sort of way. "Would it be better if she were miserable and unfulfilled?"

He made a noise of discontentment and speared a bite of spinach and egg.

Ferron knew her combativeness was really all about her mother, not Fang/Coffin's adult and avoidant daughter. Maybe it was the last remnants of Upping, but she couldn't stop herself from saying, "What she's doing is not so different from what our brains do naturally, except now it's by tech/filters rather than prejudice and neurology."

Indrapramit changed the subject. "Let's make a virtual tour of the scene." As an icon blinked in Ferron's attention space, he added, "Oh, hey. Final autopsy report."

"Something from Damini, too," Ferron said. It had a priority code on it. She stepped into an artificial reality simulation of Coffin's apartment as she opened the contact. The thrill of the chase rose through the fog of her fading hypomania. Upping didn't seem to stick as well as it had when she was younger, and the crashes came harder now—but real, old-fashioned adrenaline was the cure for everything.

"Ferron," Ferron said, frowning down at the browned patches on Coffin's virtual rug. Indrapramit rezzed into the conference a heartbeat later. "Damini, what do the depths of the net reveal?"

"Jackpot," Damini said. "Did you get a chance to look at the autopsy report yet?"

"We just got done with the next of kin," Ferron said. "You're fast—I just saw the icon."

"Short form," Damini said, "is that's not Dexter Coffin."

Ferron's avatar made a slow circuit around the perimeter of the virtual murder scene. "There was a *DNA match*. Damini, we just told his daughter he was murdered."

Indrapramit, more practical, put down his fork in meatspace. His AR avatar mimicked the motion with an empty hand. "So who is it?"

"Nobody," Damini said. She leaned back, satisfied. "The medical examiner says it's topologically impossible to turn somebody inside out like that. It's vatted, whatever it is. A grown object, nominally alive, cloned from Dexter Coffin's tissue. But it's not Dexter Coffin. I mean, think about it—what organ would that *be*, exactly?"

"Cloned." In meatspace, Ferron picked a puff of hyacinth-blue fur off her uniform sleeve. She held it up where Indrapramit could see it.

His eyes widened. "Yes," he said. "What about the patterns, though?"

"Do I look like a bioengineer to you? Indrapramit," Ferron said thoughtfully. "Does this crime scene look staged to you?"

He frowned. "Maybe."

"Damini," Ferron asked, "how'd you do with Dr. Coffin's files? And Dr. Nnebuogor's files?"

"There's nothing useful in Coffin's email except some terse exchanges with Dr. Nnebuogor very similar in tone to the Jessica Fang papers. Nnebuogor was warning Coffin off her research. But there were no death threats, no love letters, no child support demands."

"Anything he was interested in?"

"That star," Damini said. "The one that's going nova or whatever. He's been following it for a couple of weeks now, before the press release hit the mainstream feeds. Nnebuogor's logins support the idea that she's behind the utility virus, by the way."

"Logins can be spoofed."

"So they can," Damini agreed.

Ferron peeled her sandwich open and frowned down at the vatted charcuterie. It

all looked a lot less appealing now. "Nobody came to Coffin's flat. And it turns out the stiff wasn't a stiff after all. So Coffin went somewhere else, after making preparations to flee and then abandoning them."

"And the crime scene was staged," Indrapramit said.

"This is interesting," Damini said. "Coffin hadn't been to the office in a week."

"Since about when Morganti started investigating him. Or when he might have become aware that she was on his trail."

Ferron said something sharp and self-critical and radically unprofessional. And then she said, "I'm an idiot. Leakage."

"Leakage?" Damini asked. "You mean like when people can't stop talking about the crime they actually committed, or the person you're not supposed to know they're having an affair with?"

An *urgent* icon from Ferron's mausi Sandhya—the responsible auntie, not the fussy auntie—blinked insistently at the edge of her awareness. *Oh Gods, what now?*

"Exactly like that," Ferron said. "Look, check on any hits for Coffin outside his flat in the past ten days. And I need confidential warrants for DNA analysis of the composters at the BioShell laboratory facility and also at Dr. Rao's apartment."

"You think Rao killed him?" Damini didn't even try to hide her shock.

Blink, blink went the icon. Emergency. Code red. Your mother has gone beyond the pale, my dear. "Just pull the warrants. I want to see what we get before I commit to my theory."

"Why?" Indrapramit asked.

Ferron sighed. "Because it's crazy. That's why. And see if you can get confidential access to Rao's calendar files and email. I don't want him to know you're looking."

"Wait right there," Damini said. "Don't touch a thing. I'll be back before you know it."

"Mother," Ferron said to her mother's lion-maned goddess of an avatar, "I'm sorry. Sandhya's sorry. We're all sorry. But we can't let you go on like this."

It was the hardest thing she'd ever said.

Her mother, wearing Sekhmet's golden eyes, looked at Ferron's avatar and curled a lip. Ferron had come in, not in a uniform avatar, but wearing the battle-scarred armor she used to play in when she was younger, when she and her mother would spend hours Atavistic. That was during her schooling, before she got interested in stopping—or at least avenging—*real* misery.

Was that fair? Her mother's misery was real. So was that of Jessica Fang's abandoned daughter. And this was a palliative—against being widowed, against being bedridden.

Madhuvanthi's lip-curl slowly blossomed into a snarl. "Of course. You can let them destroy this. Take away everything I am. It's not like it's murder."

"Mother," Ferron said, "it's not *real*."

"If it isn't," her mother said, gesturing around the room, "what is, then? I made you. I gave you life. You owe me this. Sandhya said you came home with one of those new parrot-cats. Where'd the money for that come from?"

"Chairman Miaow," Ferron said, "is evidence. And reproduction is an ultimately sociopathic act, no matter what I owe you."

Madhuvanthi sighed. "Daughter, come on one last run."

"You'll have your own memories of all this," Ferron said. "What do you need the archive for?"

"Memory," her mother scoffed. "What's memory, Tamanna? What do you actually remember? Scraps, conflations. How does it compare to being able to *relive*?"

To relive it, Ferron thought, *you'd have to have lived it in the first place*. But even teetering on the edge of fatigue and crash, she had the sense to keep that to herself.

"Have you heard about the star?" she asked. Anything to change the subject. "The one the aliens are using to talk to us?"

"The light's four million years old," Madhuvanthi said. "They're all dead. Look, there's a new manifest synesthesia show. Roman and Egyptian. Something for both of us. If you won't come on an adventure with me, will you at least come to an art show? I promise I'll never ask you for archive money again. Just come to this one thing with me? And I promise I'll prune my archive starting tomorrow."

The lioness's brow was wrinkled. Madhuvanthi's voice was thin with defeat. There was no more money, and she knew it. But she couldn't stop bargaining. And the art show was a concession, something that evoked the time they used to spend together, in these imaginary worlds.

"Ferron," she said. Pleading. "Just let me do it myself."

Ferron. They weren't really communicating. Nothing was won. Her mother was doing what addicts always did when confronted—delaying, bargaining, buying time. But she'd call her daughter *Ferron* if it might buy her another twenty-four hours in her virtual paradise.

"I'll come," Ferron said. "But not until tonight. I have some work to do."

"Boss. How did you know to look for that DNA?" Damini asked, when Ferron activated her icon.

"Tell me what you found," Ferron countered.

"DNA in the BioShell composter that matches that of Chairman Miaow," she said, "and therefore that of Dexter Coffin's cat. And the composter of Rao's building is just full of his DNA. Rao's. Much, much more than you'd expect. Also, some of his email and calendar data has been purged. I'm attempting to reconstruct—"

"Have it for the chargesheet," Ferron said. "I bet it'll show he had a meeting with Coffin the night Coffin vanished."

Dr. Rao lived not in an aptblock, even an upscale one, but in the Vertical City. Once Damini returned with the results of the warrants, Ferron got her paperwork in order for the visit. It was well after nightfall by the time she and Indrapramit, accompanied by Detective Morganti and four patrol officers, went to confront him.

They entered past shops and the vertical farm in the enormous tower's atrium. The air smelled green and healthy, and even at this hour of the night, people moved in steady streams toward the dining areas, across lush green carpets.

A lift bore the police officers effortlessly upward, revealing the lights of Bengaluru spread out below through a transparent exterior wall. Ferron looked at Indrapramit and pursed her lips. He raised his eyebrows in reply. *Conspicuous consumption.* But they couldn't very well hold it against Rao now.

They left Morganti and the patrol officers covering the exit and presented themselves at Dr. Rao's door.

"Open," Ferron said formally, presenting her warrant. "In the name of the law."

The door slid open, and Ferron and Indrapramit entered cautiously.

The flat's resident must have triggered the door remotely, because he sat at his ease on furniture set as a chaise. A grey cat with red ear-tips crouched by his knee, rubbing the side of its face against his trousers.

"New!" said the cat. "New people! Namaskar! It's almost time for tiffin."

"Dexter Coffin," Ferron said to the tall, thin man. "You are under arrest for the murder of Dr. Rao."

As they entered the lift and allowed it to carry them down the external wall of the Vertical City, Coffin standing in restraints between two of the patrol officers, Mor-

ganti said, "So. If I understand this properly, you—Coffin—actually *killed* Rao to assume his identity? Because you knew you were well and truly burned this time?"

Not even a flicker of his eyes indicated that he'd heard her.

Morganti sighed and turned her attention to Ferron. "What gave you the clue?"

"The scotophobin," Ferron said. Coffin's cat, in her new livery of gray and red, miaowed plaintively in a carrier. "He didn't have memory issues. He was using it to cram Rao's life story and eccentricities so he wouldn't trip himself up."

Morganti asked, "But why liquidate his assets? Why not take them with him?" She glanced over her shoulder. "Pardon me for speaking about you as if you were a statue, Dr. Fang. But you're doing such a good impression of one."

It was Indrapramit who gestured at the Vertical City rising at their backs. "Rao wasn't wanting for assets."

Ferron nodded. "Would you have believed he was dead if you couldn't find the money? Besides, if his debt—or some of it—was recovered, Honolulu would have less reason to keep looking for him."

"So it was a misdirect. Like the frame job around Dr. Nnebuogor and the table set for two...?"

Her voice trailed off as a stark blue-white light cast knife-edged shadows across her face. Something blazed in the night sky, something as stark and brilliant as a dawning sun—but cold, as cold as light can be. As cold as a reflection in a mirror.

Morganti squinted and shaded her eyes from the shine. "Is that a *hydrogen bomb*?"

"If it was," Indrapramit said, "Your eyes would be melting."

Coffin laughed, the first sound he'd made since he'd assented to understanding his rights. "It's a supernova."

He raised both wrists, bound together by the restraints, and pointed. "In the Andromeda galaxy. See how low it is to the horizon? We'll lose sight of it as soon as we're in the shadow of that tower."

"Al-Rahman," Ferron whispered. The lift wall was darkening to a smoky shade and she could now look directly at the light. Low to the horizon, as Coffin had said. So bright it seemed to be visible as a sphere.

"Not that star. It was stable. Maybe a nearby one," Coffin said. "Maybe they knew, and that's why they were so desperate to tell us they were out there."

"Could they have survived that?"

"Depends how close to Al-Rahman it was. The radiation—" Coffin shrugged in his restraints. "That's probably what killed them."

"God in Heaven," said Morganti.

Coffin cleared his throat. "Beautiful, isn't it?"

Ferron craned her head back as the point source of the incredible radiance slipped behind a neighboring building. There was no scatter glow: the rays of light from the nova were parallel, and the shadow they entered uncompromising, black as a pool of ink.

Until this moment, she would have had to slip a skin over her perceptions to point to the Andromeda galaxy in the sky. But now it seemed like the most important thing in the world that, two and a half million years away, somebody had shouted across the void before they died.

A strange elation filled her. *Everybody talking, and nobody hears a damned thing anyone—even themselves—has to say.*

"We're here," Ferron said to the ancient light that spilled across the sky and did not pierce the shadow into which she descended. As her colleagues turned and stared, she repeated the words like a mantra. "We're here too! And we heard you." O

—for Asha Cat Srinivasan Shipman, and her family

Ribofunk Redivus

Some twenty-five years ago, I coined the neologism "ribofunk," promulgated a tongue-in-cheek manifesto, and then wrote a bunch of stories to illustrate what I'd envisioned. (As of the day I compose this essay, a quarter of a million Google Hits on the term, and counting!) The first part of the composite description designated a kind of SF that relied on the field of biology as its main scientific inspiration. The second half of the equation was meant to indicate, well, a funky style—hot, jazzy, carnal, life-affirming, and funny.

More or less simultaneously, the predictable term "biopunk" appeared (and, in fact, my coinage is subsumed in Wikipedia under its rival). This unfortunate reliance on the clichéd "punk" suffix has been reflected, more or less, in the subsequent literature.

Take Paolo Bacigalupi's *The Windup Girl*.

Now, I love this fine novel, and helped vote it a Campbell Award. It's pure state-of-the-art biopunk. But funky it ain't. "Grim and gritty" and "funky" are polar opposites. It's like Trent Reznor versus Lady Gaga. Unfortunately, from my humor-biased perspective, grim and gritty seems to be the default mode for speculative fiction that delves into our organic future.

To paraphrase baseball legend Casey Stengel, "Can't anybody here play this ribofunk game?"

Well, it gladdens my heart to report that at least one person can. To continue the baseball metaphor a moment, debut novelist Katy Stauber has hit a home run with *Revolution World* (Night Shade Books, trade paperback, \$14.99, 300 pages, ISBN 978-1-59780-233-8). Fast, funny, frenetic, it has echoes of Cory Doctorow and Bruce Sterling (at his most light-hearted). If you pictured *The*

Windup Girl re-imagined by a team of Alexander Jablokov and Donald Westlake, you wouldn't be so far off.

The time is some seventy years in the future, and the scenario is almost identical to that of *The Windup Girl*: Greenhouse Earth conditions causing mass deaths, scarcity, political instability and repression, with shattered societies relying for help on gene-modding and alternate energy sources. But despite this, Stauber doesn't give in to a single dystopic thought. Her characters are living their lives as best they can, with zest and panache and even glee. I'd bring up the famous lyrics by the Police—"When the world is running down, you make the best of what's still around"—but even that sentiment does not capture the genuine uplift and optimism of *Revolution World*. (The title, by the way, refers to a popular videogame that recreates Texas history.)

Much of the mad, infectious energy of the book derives from the nature of the players. We are first introduced to gene maven Harmony Somata, head of the bio-firm named Floracopia, and her four identical daughters, chief of whom from the reader's perspective is Clio, also a gengineer. They are a madcap family of beautiful female geniuses, counterbalanced in intensity and ingenuity only by two unprepossessing yet capable Canadians, Seth and Max. Seth and his uncle Max represent Omerta, an independent country-corporation offering secure data storage to governments, terrorist groups, and private individuals alike. They are setting up a server farm in Ambrosia Springs, Texas, home to Floracopia. The men quickly find their fates entangled with the Somata clan, which is all to the good, as only knowledgeable native guides will help the newcomers deal with Texas customs, a hostile US government, and corporate spies from Malsan-

to. Not to mention killer rabbits as big as pitbulls and a pack of vicious Pomeranian guard dogs.

Stauber revs her plot engines at 5000 RPM, bouncing the reader from one hilarious incident to another (alternating among many POV's to achieve her ends, even, unconventionally, leapfrogging minds from one paragraph to the next), all while making room for a developing love story between Clio and Seth. But I should make it clear that *Revolution World* is no Ron Goulart-style parody, however great such farces were. It's a genuine, hard-edged speculative look at a highly probable future, but cast in humorous and upbeat terms, rendering any "message" about how we've screwed ourselves more palatable and bearable.

I know it's not a valid critical method of literary analysis, a mistake akin to comparing apples and oranges, but if you ask yourself which world you'd rather inhabit—Bacigalupi's or Stauber's—I think you'll come down on Stauber's side every time.

The Howardian Age

We are fairly unarguably in the midst of a second boom period for Robert E. Howard and his fiction, the first such heyday occurring in the 1970s and 1980s. Conan, his most famous creation, has a monthly comic book from Dark Horse (older comics featuring Conan now have handsome archive editions), and a new movie about the thick-thewed and marginally less thick-witted barbarian is forthcoming. (I believe the ex-governor of California has finally surrendered the lead role.) Lesser characters such as Solomon Kane have received cinematic treatment as well. Smart new illustrated editions of the stories, grouped thematically, appear regularly from Del Rey. The life of the author himself has merited a Hollywood biopic, with *The Whole Wide World* (1996). Can his enshrinement in the Library of America, along with his already enthroned pal Lovecraft, be far behind?

Scholarship on REH proceeds apace

with his fan popularity. And one recent instance of the textual and cultural parsing of Howard serves as a very readable anthology for laymen and academicians alike.

I am pointing now to *The Robert E. Howard Reader* (Borgo Press, trade paper, \$14.99, 212 pages, ISBN 978-1-4344-1165-5, edited by Darrell Schweitzer. Schweitzer has rendered admirable yeoman service to SF/F/H over the years with several volumes of essays and interviews that capture lots of critical insights into fantastika, as well as primary-source recollections from the creators, and this volume is no less of a valuable accomplishment. Mixing new material with reprints, it offers everything from personal musings on Howard to close analyses of the primary texts.

We start with a chatty reminiscence from Michael Moorcock about what Howard means to him, and how his early reading of Conan was instrumental in creating Elric. This is a fine opener, and leads naturally to the next piece by Leo Grin, which charts the rise and fall and rise of REH's popularity, including the current boom. L. Sprague de Camp offers a broad but handy outline and weighing of the kinds of fiction Howard wrote, followed by Poul Anderson's personal appreciation of the work. Fritz Leiber and Robert Weinberg dig hard into the unique stylistic bag of tricks Howard employed, while S. T. Joshi goes deep into the correspondence between REH and HPL (400,000 extant words!).

Mark Hall examines the anthropological roots of the Hyborian Age, while Charles Hoffman takes an early story ("Xuthal of the Dusk") and contrasts it with its late-career reworking ("Red Nails"). "Howard's Oriental Stories" are summarized and investigated perceptively by Don D'Ammassa. Schweitzer doffs his editorial hat and puts on his critic's cap to look at Kull as a prototype of Conan, and Robert Price examines the actual depth of Solomon Kane's Puritanism.

The story "Beyond the Black River" gets a close reading from George Scithers,

and Gary Romeo offers a fascinating catalog of all the times REH himself has appeared as a metafictional character. Surely the funniest and oddest piece here is Howard Waldrop's "A Journey to Cross Plains," which is the contemporaneous account written by twenty-year-old Waldrop upon his visit to REH's hometown—with footnotes from Waldrop's putative maturity added! And rounding out the volume are Scott Connors with his examination of the marketplace realities of pulp magazines, and Steve Tompkins on REH's literary heirs.

By the end of this fine assemblage of essays, the reader—novice or expert—will feel invigorated and eager to return once again to Howard's undying, crimson-shadowed pages.

Lovely Zita, Meteor Made

Problem Number One: Not enough YA fiction is science fiction; the majority of YA fantastika is overbalanced in favor of fantasy.

Problem Number Two: The audience for comics is greying; there are not enough titles that serve as gateway drugs for younger readers.

Combined Solution to Both Problems One and Two: *Zita the Spacegirl* (First Second Books, trade paper, \$10.99, 192 pages, ISBN 978-1-59643-446-2), written and drawn by Ben Hatke. This nifty offering, promising to be merely the first volume in a series, does everything right to lure young readers, keep them entertained, and hook them on science fiction. And guess what else? I, an adult reader of some mumblety-mumble decades worth of prior reading, found the book absolutely charming and rewarding as well.

Let's look at the volume in three ways: the sheer story, the art, and the subliminals.

One afternoon, spunky yet average Earthgirl Zita (pre-adolescent, maybe ten to twelve years old) and her pal Joseph are roughhousing in a field when they come upon a smoking crater with a meteoroid at the bottom. (Nerdy Joseph is very particular about the term "mete-

roid," and I have betrayed his scientific accuracy in my section title only reluctantly, to achieve the proper Beatlesque pun.) Protruding from the meteoroid is a gadget. Zita grabs the device and boldly yet unwisely employs it, opening up a stargate through which Joseph is immediately snatched by a fuzzy tentacle, before the rift snaps shut. After a brief interval of panic and despair, Zita reopens the boomtube and follows.

She emerges on a planet overstuffed with weird sophonts of a thousand races, most of whom just ignore her. Her stargate device shattered by the clumsy footstep of a hulking giant named Strong-Strong, she quickly learns the planet is under death sentence from imminent collision with an asteroid, and that Joseph is the captive of a race called the Sciptorians. Getting advice and help from a fellow human named Piper, a duplicitous rogue, she embarks on a journey to the Scriptorian castle to rescue her buddy, picking up friends and helpers along the way, including a giant mouse, a braggart battlebot, and a timorous junkbot.

Immediately, the seasoned reader can sense that Hatke has tapped into some rich Ur-tropes. Abducted friend, dangerous quest, stranger in a strange land, outlaw crossroads of the universe—He's on the same wavelength as Heinlein's *Have Spacesuit—Will Travel* (1958), Laumer and Brown's *Earthblood* (1966), Bogie's *Casablanca* (1942), and any other number of epic fish-out-of-water-in-an-exotic-place tales. In fact, the sophistication of the narrative, with a minimum of handholding infodumps, is essential to the book's allure. After all, trying to catch kids who have grown up on *Futurama* is a little more difficult than the task that, say, Eleanor Cameron faced with her *Mushroom Planet* books.

And so on a pure story-telling level, Hatke delivers all the laughs, suspense, drama, fun and speculation that we can ask for, leaving Zita at book's end preparing to embark on a long and no-doubt adventure-filled journey home in Piper's starship.

But what of the art? After all, with a graphic novel, that's more than half the freight.

First off, Hatke's style is charming, a soothing blend of Watterson, Bodé, and Knight (that would be Hilary Knight, of *Eloise* fame). His character designs for the humans and aliens are bright, whimsical and attractive. He can brightly render great techno-urban landscapes, as well as pastoral ones. His page layouts are refreshingly uncluttered and active, with a sensible use of full-page spreads. There's even a bit of Moebius in his crowd scenes. Colors are subdued yet vivid. All in all, the package is clean and enticing, fun and inviting.

The last thing to examine are the subliminals. By this I mean any kind of non-explicit message. Of course, having a female protagonist is a message in itself, the main one, but it's a bit of preaching that Hatke delivers in a subtle and unbiased fashion. Making the helpless captive victim be Zita's male buddy is also a contradiction of cliché, and a welcome one. But Hatke does other clever things to reinforce his point of girlish competence, such as on page 34, when Zita steps through a gap in a wall. We see she's emerging in the middle of a poster touting the adventures of an adult female action hero. It's as if Zita is stepping into her own future role.

But all these subliminals—including ones about friendship and duty—pale when placed next to the sheer excitement and zest of Zita. Let's hope Hatke can pull off at least a hat-trick of two more books.

Into the Moorcockian Web

Editor John Davey, along with publishers David Britton and Michael Butterworth, as well as designer John Coulthart, can all give themselves immense pats on the back for the artistic and editorial triumphs that are exemplified by their latest production, *Into the Media Web* (Savoy Books, hardcover, £48.00, 720 pages, ISBN 978-0-86130-120-1). This book is brilliantly designed, lovingly researched

and assembled and illustrated and printed, and amounts to a pinnacle of the bookmaker's art. Well done, chaps! Now, let me see, who else deserves congrats for this awesome project . . . ?

Oh, yes, there's a little matter of the fellow who wrote all the text, probably, at a rough guess, upwards of a quarter of a million words! I think his name is Michael Moorcock. Let me just check the title page. . . . Yes, that's it, this volume purports to be MM's "Selected short non-fiction, 1956-2006." But it certainly can't be the work of just one man. There has to have been a team behind the text. . . .

All kidding aside, this incredibly diverse and bountiful omnibus by Grand Master Moorcock is overstuffed with an immense range of his writings, a spectrum and abundance that I defy any other living SF writer to duplicate. Oh, sure, some talented genius like Bruce Sterling or Robert Silverberg may have penned a fair variety of non-fiction pieces, but in such quantity? No way! Moorcock stands amazingly alone in his career totals.

The contents here are arranged in a zigzag manner meant to encourage our appreciation, not following a strict chronology of publication. We begin, appropriately enough, with a bit of autobiography, gaining a sense of Moorcock's formative youth and subsequent maturity. Then, it's off to the races!

We find everything here from his earliest fanzine pieces—even then exhibiting sophistication and catholicism and style—to paeans to writers and other creators whose work he loves, to journalistic review stints, to polemics, to epistolary reportage, to diary entries, to letters to fans, to accounts of musical escapades, and on to travelogues. Throughout, we can only marvel at Moorcock's knowledge and experience, his professionalism and, in the best sense of the word, his amateur enthusiasms. The man knew practically everybody worth knowing in the span covered here, and was present at the birth of so much critical genre history. Any SF reader with an ounce of interest in the backstory of our field will

find countless fascinating incidents retailed here. Want to know how Spinrad's *Bug Jack Barron* came to be written and printed? Or how UK comics were produced in the 1950s? Just dip into this book, and you'll soon find out that data, or something equally eye-opening.

The fact that the majority of these pieces are only a few pages in length, and unconnected or non-sequential, encourages random dipping. This is a book that will reward idle browsing.

Which is not to say there is no heavy meat here. Take a piece like "Jack's Unforgettable Christmas." This is Moorcock's summary of his long friendship with the writer Jack Trevor Story (a figure too little known in the USA) and that writer's sad career arc following a police brutality incident. (Shades of Peter Watts's recent misfortunes, though Peter's fate is hardly yet written.) In this

essay, we see the best of Moorcock and his writing. A passionate involvement in the matter at hand; a comprehensive grasp of all the details and subtleties; an abiding sense of friendship; an eternal quest for justice; an appreciation of life's bitter ironies; a wise philosophical stance regarding the possible limits of one's actions against the universe. You could take that catalogue of virtues and apply it to his fiction as well, but it's even more apparent in this form.

Moorcock turns seventy-two this year. Last year he published his most recent book, a Doctor Who novel titled *The Coming of the Terraphiles*. So far as I know, he had never previously done any franchise fiction. But with nothing left to prove, he was willing to venture into new territory even this far into his career.

Now that's what I call a Grand Master! ☺

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TWENTY-SIXTH ANNUAL READERS' AWARD

It hardly seems possible that we could be up to the January issue already, but that's what the calendar says—and that means that once again it's time for our Readers' Award poll, which is now in its twenty-sixth year.

Please vote. Most of you know the drill by now. For those of you who are new to this, we should explain a few things.

We consider this to be our yearly chance to hear from you, the readers of the magazine. That's the whole point behind this particular award. What were your favorite stories from *Asimov's Science Fiction* last year? This is your chance to let us know what novella, novelette, short story, poem, and cover, you liked best in the year 2011. Just take a moment to look over the Index of the stories published in last year's issues of *Asimov's* (pp.109-111) to refresh your memory, and then list below, in the order of your preference, your three favorites in each category. By the way, we love to get comments about the stories and the magazine, so please free to include them with your ballot. Please note: unless you request otherwise, comments will be considered for publication with attribution in the editorial that accompanies the announcement of the Readers' Award Results.

Some cautions: Only material from 2011-dated issues of *Asimov's* is eligible (no other years, no other magazines, even our sister magazine *Analog*). Each reader gets one vote, and only one vote. If you use a photocopy of the ballot, please be sure to include your name and address; your ballot won't be counted otherwise.

Works must also be categorized on the ballot as they appear in the Index. No matter what category you think a particular story ought to appear in, we consider the Index to be the ultimate authority in this regard, so be sure to check your ballots against the Index if there is any question about which category is the appropriate one for any particular story. In the past, voters have been careless about this, and have listed stories under the wrong categories, and, as a result, ended up wasting their votes. All ballots must be postmarked no later than February 1, 2012, and should be addressed to: Readers' Award, *Asimov's Science Fiction*, Dell Magazines, 267 Broadway, 4th Flr., New York, NY. 10007. You can also vote online at asimovssf@dellmagazines.com, but you must give us your physical mailing address as well. We will also post online ballots at our website, so please check us out at www.asimovs.com.

Remember, you—the readers—will be the only judges for this award. No juries, no panels of experts. In the past, some categories have been hotly contended, with victory or defeat riding on only one or two votes, so every vote counts. Don't let it be your vote for your favorite stories that goes uncounted! So don't put it off—vote today!

BEST NOVELLA:

1. _____
2. _____
3. _____

BEST NOVELETTE:

1. _____
2. _____
3. _____

BEST SHORT STORY:

1. _____
2. _____
3. _____

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1. _____
2. _____
3. _____

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1. _____
2. _____
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NAME: _____

ADDRESS: _____

SIGNATURE: _____

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SF CONVENTIONAL CALENDAR

November is a busy month. My picks are WindyCon, TusCon, OryCon, NovaCon, LosCon, PhilCon (where I'll be), ArmadaCon, SFContario and ChambanaCon. I'll also be at DarkoverCon, mainly for the music and old friends. Plan now for social weekends with your favorite SF authors, editors, artists, and fellow fans. For an explanation of con(vention)s, a sample of SF folksongs, and info on fanzines and clubs, send me an SASE (self-addressed, stamped #10 [business] envelope) at 10 Hill #22-L, Newark NJ 07102. The hot line is (973) 242-5999. If a machine answers (with a list of the week's cons), leave a message and I'll call back on my nickel. When writing cons, send an SASE. For free listings, tell me of your con five months out. Look for me at cons behind the Filthy Pierre badge, playing a musical keyboard. —Erwin S. Strauss

NOVEMBER 2011

- 11-13—WindyCon. For info, write: Box 184, Palatine IL 60078. Or phone: (973) 242-5999 (10 am to 10 pm, not collect). (Web) windycon.org. (E-mail) info@windycon.org. Con will be held in: Lombard (Chicago) IL (if city omitted, same as in address) at the Westin. Guests will include: author Catherine Asaro, artist Joe Bergeron, musician Frank Hayes, Hugh Daniel, M. Brotherton, C. Ready.
- 11-13—TusCon. home.earthlink.net/~basfa. Hotel Tucson City Center, Tucson AZ. Patricia Briggs, Ed Bryant. SF and fantasy.
- 11-13—OryCon. orycon.org. Doubletree Lloyd Center, Portland OR. E. E. Knight, editor Scott Allie, Jim Pavlec, musicians Tempest.
- 11-13—Anthology. anthocon.com. Best Western Wynwood Hotel and Suites, Portsmouth NH. Imaginative literature and art.
- 11-13—OmegaCon. omegacon.net. Siren WI. Low-key SF and fantasy relax-a-con.
- 11-13—NovaCon. novacon.org.uk. The Park Inn, Nottingham UK. John Meany. General SF and fantasy convention.
- 11-13—ArmadaCon. (44 0 1752) 267-873. armadacon.org. Plymouth UK. General SF and fantasy convention.
- 11-13—New England Crime Bake. crimebake.org. Dedham (Boston) MA. For fans of mystery fiction.
- 11-13—IzumiCon. izumicon.com. Midwest City OK. Anime.
- 11-13—Anime Vegas. animevegas.com. Las Vegas NV. Anime.
- 12—MarsCon. 651339-0397. Bloomington (Minneapolis/St. Paul) MN. Masquerade ball.
- 12—Le Bal des Vampires. (510) 522-1732. peers.org. Elks Lodge, Alameda (San Francisco) CA. Le Theatre des Vampires. Dance.
- 12—DotCon. dot-con.com. Toronto ON. Anime.
- 12-13—HalCon. hal-con.com. World Trade and Convention Centre, Halifax NS. SF, fantasy, comics. Actors, authors, comics people.
- 12-13—FAN:dom. wlx.com/fandom_con/fandom. University of West Florida, Pensacola FL.
- 18-20—PhilCon. philcon.org. Crowne Plaza, Cherry Hill NJ. Doctorow, Vallejo & Bell, Tucker. The oldest con, celebrating 75 years.
- 18-20—SFContario. sfcontario.ca. Ramada Plaza, Toronto ON. John Scalzi, editor Gardner Dozois, Karl Schroeder, musicians Toyboat.
- 18-20—Pure Speculation. purespec.org. Edmonton AB.
- 18-20—Anime USA. animeusa.org. Hyatt, Crystal City VA (near DC). Laura Bailey, Trina Nishimura, Travis Willingham, DJ Sisen.
- 18-20—TeslaCon. teslacon.com. Madison WI. Steampunk.
- 18-20—Midwest FurFest. furfest.org. Rosemont (Chicago) IL. Anthropomorphics.
- 18-20—AniMaine. animaine.com. South Portland ME. Anime.
- 18-20—Gobble-Con. gobble-con.com. Stamford CT. Anime.
- 25-27—LosCon, 11513 Burbank Blvd., N. Hollywood CA 91601. loscon.org. LAX Marriott, Los Angeles CA. J. de Chancie, J. Hertz.
- 25-27—ChamBanaCon, Box 2908, Springfield IL 62708. chambanacon.org. Urbana IL. Low-key SF and fantasy relax-a-con.
- 25-27—DarkoverCon, Box 7203, Silver Spring MD 20907. darkovercon.org. Near Baltimore MD. Music and alternative spirituality.
- 25-27—TARDIS. chicagotardis.com. Lombard (Chicago) IL. Doctor Who.

DECEMBER 2011

- 1-4—TomodachiFest. tomodachifest.com. Boise ID. Anime.
- 2-4—SMOFCCon. smofcon29.org. Park Plaza Victoria Hotel, Amsterdam, Netherlands. Where convention organizers meet to talk shop.
- 9-11—Starbase Indy. starbaseindy.com. Indianapolis IN. T. Todd, J. Acovone, J. Billingsley, D. Downey. Commercial Star Wars con.

AUGUST 2012

- 30-Sep. 3—Chicon 7, Box 13, Skokie IL 60076. chicon.org. Chicago IL. Resnick, Morrison, Musgrave, Scalzi. WorldCon. \$175+.

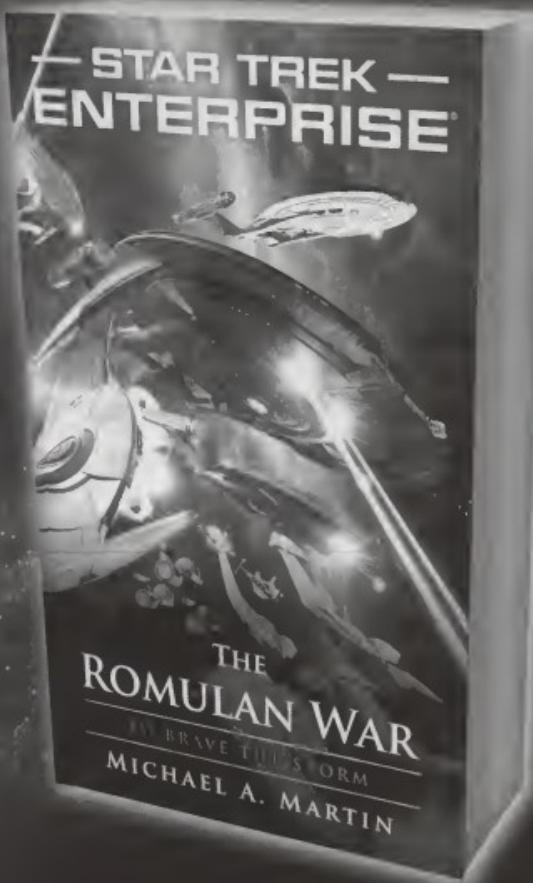
AUGUST 2013

- 29-Sep. 2—Lone Star Con 3, Box 27277, Austin TX 78755. lonestarcon3.org. San Antonio TX. The World SF Convention. \$160.

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